YACHTING

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Dinghy Sailing on the Genesee

Small Boat Sailing is a Phase of Yachting Which Promotes Enthusiastic Sportsmanship and the Growing Fleet of the Genesee Dinghy Club May be Accepted as Abundant Proof That the Twelve and Fourteen-Footers Appeal to Many Devotees of Wind-Driven Craft on the Historic Waters Which Were for Long the Hunting and Fishing Grounds of the Seneca Indians

By STILLMAN TAYLOR

EX-COMMODORE EVERETT EMERSON IS AN ENTHUSIASTIC WORKER IN PROMOTING SMALL BOAT SAILING AND DONATED THE EMERSON CUP, WHICH WAS WON BY THE GENESEE DINGHY CLUB IN THE SERIES OF RACES SAILED BETWEEN BOATS OF THIS CLUB AND THE CRAFT OF THE TORONTO CLUB

ON the south-shore of Lake Ontario picturesquely builded on the eastern bank of the Genesee River, is the club home and anchorage of a very live and up-to-date organization known as the Genesee Dinghy Club. Few yacht clubs are so fortunate as to occupy a site possessing the delightful scenic charm replete with a wealth of historical association and tradition, for the river known as the Genesee was for long the favorite rendezvous and hunting ground of the Seneca Indians and here along the bluffs that guard the river basin may be seen numerous well defined trails which were used by them many years ago. The Seneca tribe has figured in many stories the most famous perhaps being a volume of Cooper's Leather-stocking tales familiar to a wide circle of readers under the title of "The Last of the Mohicans." At the time of the Dutch settlement in New York in 1609, the Senecas, Cayugas, Mohawks, Oneidas and Onondagas were united to form the great Iroquois Nation—the *Ho-de-no-sau-nee*, or people of the Long House, and the great courage, vitality and determination of the Iroquois have won the admiration and respect of the world and to the title of the master-type of American Indian. So powerful a federation naturally possessed a rich store of oral literature and legendary lore and as the Iroquois tales speak of great deeds, of nature and the forces of nature, they are rightly considered the classics of the aboriginal American.

To the labors of Mrs. Harriet Maxwell Converse in recording the legends and nature myths of the New York Iroquois, the country is very deeply in debt. This remarkable woman who devoted a lifetime to the unselfish work of preserving the records and the relics of the aborigines, is worthy of notice. Her great interest in the Indians and her remarkable influence with them as a trusted and well loved friend forms a charming chapter in Indian history, for the Indians held her in such high esteem that they bestowed the greatest honors upon her and hailed her as a sister and a mother, calling her *Ya-ie-wa-nah*, She Who Watches Over Us, and gave her a seat in their councils. To Mrs. Converse who loved and lived with the Indians we gladly acknowledge our indebtedness for the many interesting tales she has recorded, among which the story of Gun-no-do-yah, The Thunder Boy is well worth reading, since it symbolizes the waters of the lake we are about to sail upon.

"He-no, the Thunderer, had hurled down a terrific rain storm which had flooded the land and overflowed the lakes and rivers, and in pity for the Earth, sent down Ha-de-ne-no-da-on, one of his aides to pacify the waters.

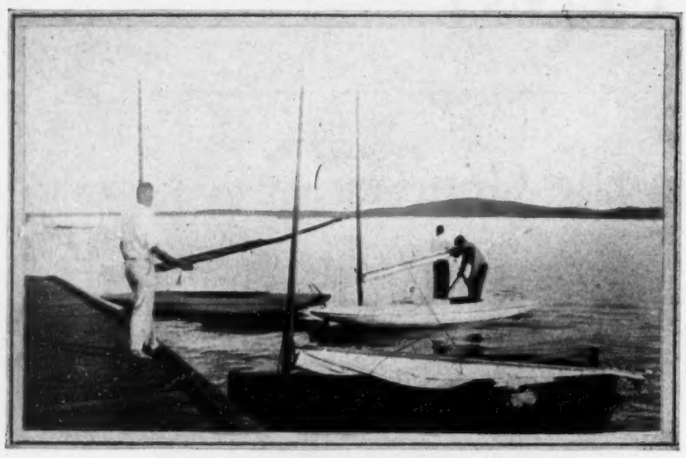
"As Ha-de-ne-no-da-on was passing over a canyon of the Senecas, he heard a voice wailing in great distress and descending, found a small child floating in the flood that had carried its parents away. Recognizing the child as Gun-no-da-yah, the son of a chief whom on his earth visits he had frequently seen, and who was a great warrior, he determined to save it, and carrying it to his home in the sky, laid it to rest on a strong black cloud and returned to earth on his peace mission. He-no, who had been out drilling his Thunderers, upon returning overheard the boy grieving the loss of his parents and, deciding to adopt him (for orphans and neglected children in Iroquoian folk lore were commonly adopted by the nature spirits who taught them mysteries and ceremonies) transformed him into a Thunder Hunter. Said He-no, 'He has been sent to me; he is human and knows all the paths of the earth, and can render me great service. There dwells in the lake a human monster that no mortal has been able to kill; my Thunderers, not being of earth, have sought him in vain; and he defies me and my thunder bolts while he ravages the lake of its fish, and frightening the fishers away deprives the people of their food. Gun-no-da-yah, having been human, can follow the trails of the earth. I will make him powerful, and give him a strong bow and arrow, and he shall follow my storms when my black clouds (Thunder Spies) shadow the lakes and hunt the monster to its death.'

"Now, Gun-no-do-yah, feeling that he owed his life to He-no, whose faithful Thunderer had rescued him from the water, was glad to do whatever he could to evidence his gratitude, and when He-no's black clouds descended to earth, he faithfully followed to the lakes.

"But for many months his search was in vain. Only one lake (Ontario) remained to be searched, and, thought Gun-no-do-yah, 'Its waters are deep and broad, it is there I will find this terrible serpent.' So, when He-no's black clouds hung heavy over the lake, obscuring the light of the sun, he stealthily approached the shore, when to his delight, he beheld the monster lashing the water with its great tail.

"With steady aim Gun-no-do-yah drew his bow and sent swift his arrow, but before it could reach its mark, the monster had vanished, leaving a trail of foam in which the arrow harmlessly sank.

"Many days Gun-no-do-yah had visited the lake and frequently had aimed at the monster floating on the water, but only to waste his arrows in the foam of its trail as it vanished. But one night when the Thunderers were savagely hurling their bolts over the lake which the clouds, had obscured in their blackness, and the fish swam deep in fear of the reverberating echoes, Gun-no-do-yah went boldly into the lake, and



THE 12-FOOT GENESEE DINGHY IS SHOWN IN THE FOREGROUND—A TYPE OF CRAFT WHICH HAS BEEN DEVELOPED TO BECOME THE LAST WORD IN CRAFT WHICH ARE INEXPENSIVE TO BUILD, VERY FAST UNDER SAIL AND SEAWORTHY ENOUGH TO STAND UP IN HEAVY WEATHER ENCOUNTERED IN CRUISING ON LAKE ONTARIO

encountering the snake again drew his bow, when the snake beckoned to him to come closer and listen: and then it began to speak. 'Come closer' it said, 'and fear me not. I know you well, and I know your strong arrows; they can not reach me. He-no, your master, I fear not; I scorn his thunder, the lightning passes by me. Your task is useless and you need not serve him. I am your friend and will teach you how to shoot the fish in the night. I will reveal to you all the secrets of the waters. Come with me, I will guide you to my home in the rocks deep below which the sun never sees. Come and comb my long mane, it is tangled with fish and is heavy.'

"Gu-no-do-yah would not listen, he came to kill; but as he drew his bow with all his strength, the string snapped, the dead arrow fell to the water, and he was powerless. Raising its head high in the air, the monster opened its hissing mouth, and seizing Gun-no-do-yah, carried him down to the bottom of the lake.

"He-no was sleeping, when Gun-no-do-yah appeared to him in a dream and related his misfortune, that he had found the snake monster in the Lake Ontario and that it had devoured him.

"The dream caused He-no great anguish, and he determined to rescue Gun-no-do-yah; so hastily summoning his bravest warriors and relating to them the fate that had overtaken him, he sent them to earth to plow through the lake. Diligently they plowed through the deep caves under the water where they found the monster sleeping; and drawing it from its hiding place carried it to He-no, who slew it and drew from its body the still living Gun-no-do-yah. And great was the rejoicing of the Thunderers and warriors.

"Now, that Gun-no-do-yah had been saved, He-no would never permit him to revisit the earth, but that he might have him ever near him, made him one of his aids to accompany him during the storms and hurry the lightning."

To this day Lake Ontario is noted for its heavy winds and when they drive the canoe and sailing craft high upon the surging crests, the Indians know but how few yachtsmen who and visit sail upon the broad lake have any idea of the aboriginal personification of the storm with the snake "twisting the water" in its revenge and when the lightning darts quick across the sky, the Indian whisper, "Gun-no-do-yah is chasing it away!"

ALL OFFICERS OF THE GENESEE CLUB ARE EVER WORKING TO PUSH THE SPORT OF DINGHY SAILING, AND CHARLES R. DRAKE, THE SECY. AND TREAS. IS ACTIVE IN HELPING FELLOW MEMBERS TO BOOST THE SPORT

Many years have passed since the birchen-barks of the Senecas have glided across the mouth of the Genesee and out upon the broad Ontario but the canoe and the small sailing boat are still seen flitting across the blue waters with enthusiastic yachtsmen at the helm. And it is entirely owing to the deep regard of Capt. Delano for the small sailing boat, which set the first example to be soon followed by many other devotees of the sail, to at length result in the organization of the progressive Dinghy Club of to-day. While a young man some 56 years ago, Capt. Delano wanted a small sailing boat and possessing a 12-foot skiff he rigged his craft with centerboard and sail and used her for one season. But the Captain is a carpenter by trade and having many ideas regarding small boat building and construction he went to work the next year and brought out the first sailing skiff—the original of the now famous Genesee-dinghy, a type of boat particularly well suited for day sailing and which even the boy and girl can handle easily and with safety.

As the number of small boats grew to form a good sized fleet of amateur-manned craft, yachtsmen got together and organized in the fall of 1912 the present association which was first called the *Dinghy Fleet* but changed at the next meeting to the Genesee Dinghy Club by which name the association is now well and favorably known. The original officers were Commodore C. Ball, now Lieut. in the Marine Corps in France; Vice-commodore, F. H. Low; Fleet-captain, W. G. Sheehan, now Capt. U. S. R. Quartermasters Corps; Sec. and Treas., B. K. Sheldon, now Lieut. Ordnance Dept. in France; Measurer, S. M. Gore. The remainder of the original members were Harold Fisher and J. K. Foley. With these seven yachtsmen to start the club it steadily grew until at the present time the club roster carries a list of fifty-one members, including Captain Delano to whom the club desiring to show its appreciation for his work in designing and building the Genesee-dinghy, elected to honorary membership in 1913 with all the privileges enjoyed by active members. The Captain immediately went to work and built a boat for his own use which has proved just a little better

CAPTAIN DELANO SAILED THE ORIGINAL MODEL DINGHY 56 YEARS AGO, AND WHILE NOW A VETERAN SKIPPER 76 YEARS OF AGE, HE IS STILL ACTIVE IN IMPROVING FROM YEAR TO YEAR HIS PREVIOUS DESIGNS AND CONTINUES TO FIND PLEASURE IN PARTICIPATING IN CLUB CRUISES AND HANDLES THE TILLER OF HIS OWN DINGHY AS EXPERTLY AS THE YOUNGEST MEMBER OF THE CLUB

than others and he has been improving the design each season until the little craft now have very fine lines and are much lighter than formerly and much faster under sail. The Genesee-dinghy are smooth bottom boats, 12 ft. long with a beam of 4 ft. 6 in. and amidship depth of 1 ft. 6 in. The frame is of oak with the ⅝-inch ribs spaced 6 inches apart and the planking is of ⅜-in. white cedar. The decks are laid in mahogany and extend from the stem aft 4 feet to the centerboard trunk. These little craft carry a 40-lb. steel centerboard and are cat-rigged with a sail area of 96 square feet. Although weighing but 250 pounds when fully rigged, the Genesee-dinghy is a remarkably good sea boat and when well handled will weather a heavy blow without taking in much water, while the little craft is surprisingly fast when beating to windward.

Although primarily designed for day sailing the Genesee-dinghy is well adapted for cruising in fresh waters where tides do not have to be contended with, and two men can sleep comfortably on the bottom with a tent stretched over the boom and gaff to entirely enclose the cockpit for protection. Cooking aboard is not impossible and many a good meal may be prepared with a condensed alcohol stove set in a pail to prevent any possibility of fire. The dinghy is likewise a good craft to use with an outboard-motor, as was proven by the voyage of the *Sea-Pup* some few years ago on its trip from New York to the port of Boston.

That the Genesee-dinghy has greatly assisted in promoting the sport of small boat sailing is well evidenced in the interest shown by members of the Genesee Dinghy Club, and with the election of J. E. Emerson to membership in 1913 the club gained a very enthusiastic member who has done much to promote small boat racing through the establishment of races between the Genesee Club and the Lake Skiff Sailing Association of Toronto, Canada. The first regatta was held last August and as the L. S. S. A. did not have a 12-foot class the use of the Genesee dinghies were offered the visitors. As the boat numbers were drawn by all entrants and the Genesee men were not allowed to use their own craft in case they should chance to draw them, the Canadian yachtsmen were given an absolutely square deal and were beaten by only three points.

The two races over the 4½-mile triangular course were closely contested for the prize—a large silver cup presented by Commodore Emerson. The two racing days brought forth a fine exhibition of small boat handling under a fresh breeze and after the cup race was over the entire fleet of dinghies, manned by almost all amateurs who could handle a tiller, were sent away in a grand free-for-all race. The skippers of the Toronto club were represented by eight craft and the Genesee club with eleven and after an exciting struggle Geo. Roat of Rochester and Capt. Arthur Turrall of Toronto swept over the line stem to stem with the spectators about evenly divided as to the winner. The Captain of the day stopped all arguments by declaring Capt. Turrall the winner by one second. In the two day meet Rochester won two cups and Toronto one, and the Canadian yachtsmen, who are mighty fine fellows, expressed their pleasure with the generous reception given them by the Genesee Dinghy Club and are looking forward to the time when they may entertain the American club and stage the regatta in Canadian waters.

While the war may interfere with carrying out the full sailing programme for this year, the Lake Skiff Association has voiced their intention of building a 12-foot class to compete and the Rochester Canoe Club already have a fleet of six dinghies, and as soon as the world war is over Ex-commodore Emerson plans to build a fourteen-footer to sail for the Douglas Cup at the regatta to be held on Toronto Bay. As the main object of the Genesee Dinghy Club is to interest the younger element in sailing craft by giving an opportunity to indulge in clean sport at the least possible expense, the Genesee Dinghy Club has tried to keep the dues down to the lowest possible figure, asking just enough to pay expenses of building and the necessary improvements, which the annual dues of $20 no more than cover. Each season all the fleet are assembled for participating in the club cruise and during the existence of the association practically every foot of Lake Ontario has been covered even up into the reaches of Georgian Bay.

THE GENESEE DINGHY FLEET FORMS AN ATTRACTIVE PICTURE WHEN FIFTEEN OR MORE CRAFT BUNCH GRACEFULLY TOGETHER WITH EACH SKIPPER ON THE ALERT WHILE ENDEAVORING TO WORK HIS OWN CRAFT INTO THE MOST ADVANTAGEOUS POSITION OR A LITTLE FRIENDLY RACE TO TEST THE GOOD POINTS OF BOAT AND THE ABILITY OF THE SKIPPER TO HANDLE HER TO THE GREATEST ADVANTAGE

VICE-COMMODORE T. ALBERT SHARP IS A STAUNCH BELIEVER IN THE 12-FOOTER AND STANDS EVER READY TO HELP HIS SHIPMATES FOR THE GOOD OF THESPORT

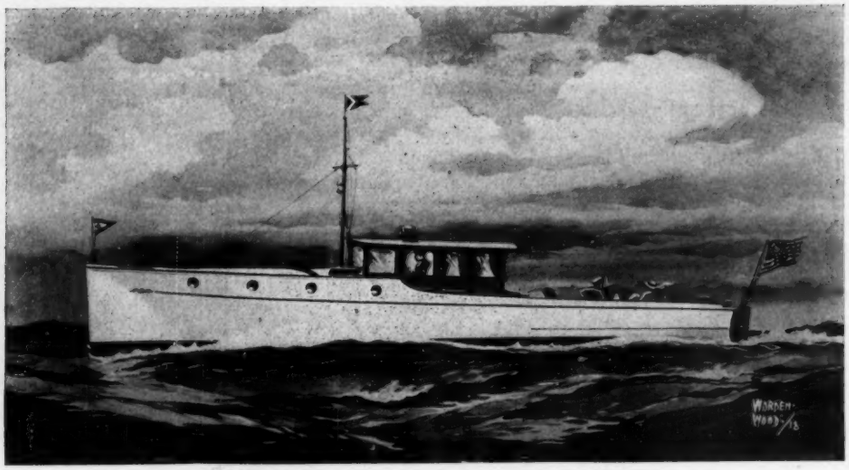
COMMODORE R. H. AHRENS HAS FOR THE TIME BEING, BERTHED HIS LITTLE SHIP THAT HE MAY CONTRIBUTE HIS QUOTA IN THE GREAT ARMY OF UNCLE SAM

The Junior Naval Reserve

OVER 8,000 U. S. Junior Naval Reserves are training for the navy and merchant marine at our local ports besides 300 at Camp Daniels at West Palm Beach, Fla. This organization is preparing also to widen its scope and activities on a large scale. For over two years it has endeavored to interest high officials and prominent business men in the pressing necessity of training young Americans for the merchant marine with only mediocre success. Recently several influential business men and officials have volunteered to lend their assistance. The Junior Naval Reserve headquarters are at 218 West Fifty-eighth street, this city. There are 325 stars on the service flag of the New York City training station, most of these young men being assigned to the navy as petty officers. Captain Till, the local drill master, is now drilling 600 cadets and has sent out a call for 500 more.

OFFICERS, GENESEE DINGHY CLUB OF ROCHESTER, N. Y.

Commodore, R. L. Ahrens
Vice-Commodore, T. A. Sharp
Fleet Captain, R. H. Nagle
Cor.-Sec'y, C. E. Noxon
Sec'y and Treas., C. R. Drake



A NEW CRAFT BUILDING AT THE PLANT OF THE GREAT LAKES BOAT BUILDING CORP. FOR MR. HARRY C. STUTZ OF INDIANAPOLIS, IND.

Emma Belle II, a Cruiser of Lake Winnebago

There Are Many Yachtsmen Who Are Interested in a Comfortable Yacht, Suited Alike for Comfortable Cruising and Day Sailing and This Desirable Combination Motor-Yacht Is Well Illustrated by Picture and Described in the Accompanying Text.

FROM the large variety of motor craft now constructed and kept in stock by many boat builders, the yachtsman is likely to find just the type that will measure up to his ideas of what a boat should be. Stock boats are made to those specifications which usually fulfill the requirements of the average yachtsman, but whenever the needs of the purchaser call for many special features of design the craft must be built to his order.

Emma Belle II is a special 38-foot yacht especially adapted for comfortable cruising in inland waters and was designed and built by the Great Lakes Boat Building Corp. of Milwaukee, Wis., for Mr. Harry C. Stutz, president of the Stutz Motor-car Co. of Indianapolis, Ind. This graceful motor-cruiser will be used at the owner's summer home on Lake Winnebago, and to obtain the minimum of draft the tunnel-stern-construction has been used to enable the craft to be used in the numerous shallow reaches of this picturesque island-studded lake.

From the profile view of this summer-cruiser the fine and graceful lines of hull and cabin are well shown. The arrangement below provides a well equipped galley under the flush fore deck, fitted with a large and well insulated ice-box, double burner alcohol yacht-range, sink, dish racks and roomy provision lockers. Immediately aft of this compartment is the main cabin, fitted with pullman berths on starboard and port sides, portable tables, and special electric fixtures of the pullman-car type. A large toilet room opens from the main cabin and is equipped with water closet, lavatory, medicine chest and laundry bags in addition to the usual small toilet fittings. Opposite the toilet room on the starboard side is a roomy built in wardrobe.

The bridge-deck amidships is protected with a mahogany cabin of the limousine cab type, fitted with large plate glass windows, pullman shades, electric light fixtures and deck chairs. All windows are arranged to either open by hinging against the roof or drop into sockets. Entrance doors are provided on port and starboard sides as well as on the after side of the house leading to the cockpit. All inside finish is in white enamel and natural mahogany, and the cabin compartments are upholstered in royal blue velvet over spring cushions, while the self-bailing cockpit aft is fitted with a comfortable lazy-back seat and six wicker yacht chairs.

The Navy Department requests patriotic citizens to loan spy glasses and binoculars, which, if possible, will be returned to the owners after the war. It should be remembered that the kind of binoculars required are field glasses and not opera glasses.

The Branch Hydrographic Office 78-80 Broad Street, New York, N. Y. (Telephone—Broad 207), will receive and forward to Washington, D. C., free of expense to the owner, any such glasses, and will mark them with a tag, pack, and mail them.

All controls are carried to the steering column within convenient reach of the helmsman which gives one man control of the motor which is installed under the bridge deck. This power plant consists of a Type L. M. 6-cylinder 5 in. by 5 in. Wisconsin Motor which is estimated to give a turn of speed of 15 miles an hour. As the bridge deck is provided with large hatches in three sections, a large opening is made to permit of the removal of the entire power plant as a unit. Two hundred gallon fuel tanks of Janney-Steinmetz manufacture, are used and these are of seamless drawn steel, tinned outside and inside and fitted with the necessary baffle plates and strainers, together with double outlet connections for each tank. Double outlets are provided to permit the installation of a standpipe extending up into the tank about 6 in. and used as the main outlet. By this arrangement a reserve supply of fuel is always on hand after the gas has been used to the top of the standpipe.

In the construction of the *Emma Belle II* heavy bronze ship hardware has been used throughout and the deck equipment is very complete and the specifications call for an 8-foot dinghy to be carried over the stern transom on suitable davits. All deck fittings are of polished bronze from special patterns and the accessories include a polished bronze Andrade Automatic windlass for handling the ground tackle.

Yachting in Aloha Land

Hawaii is a Group of Tropical Coral-Fringed Islands Washed by the Blue Waters of the Pacific and in This Illustrated Article Fellow Shipmates Will Find a Description of the Boats, the Waters That Are Cruised in, and the Favorite Racing Grounds

By MAX BOLTE

HAWAII is known to but a comparatively few number of the yachtsmen in the States. It might be well then, to locate Hawaii for those who are not acquainted with the geography of the Pacific Ocean. The Hawaiian Islands, incorrectly spoken of as the Sandwich Islands, are a group of twelve islands lying in longitude 155 degrees—159 degrees west and in latitude 18 degrees—23 degrees north. The largest island, Hawaii, is considerably smaller than the state of Connecticut, and the whole group is only 6,449 square miles in area, a mere speck on the face of the earth. These islands are a possession of the United States, being known as the Territory of Hawaii.

Yachting, the king of sports, is by no means unknown out here in the Mid-Pacific. It is a very ancient sport, having been pursued by the natives many centuries before the first white man ever came to the islands. The natives used dug-out canoes, which they made from a tree called the koa tree; these canoes often were as long as thirty or forty feet, and are remarkable examples of the handicraft of the natives, when it is considered that only stone implements were used to hew the tree trunks into shape. The sails of these canoes were made from a wood pulp and the crafts were speedy sailers, especially with the wind, but not having keels they were slow in windward work.

Yachting, as it is today, is a far different sport from what it was with the natives. The yachts in the Hawaiian waters are modern in every respect and are in no way inferior to those in the States. The yachtsmen are a very enthusiastic crowd, most of them being young fellows of moderate means, between twenty and thirty years of age.

The one and only yacht club in the territory is the Honolulu Yacht Club, which, only in its tenth year of existence, might rival many a similar organization in the States in the amount of interest taken in the sport. The Honolulu Yacht Club is a sailing club, all of its efforts being to further the art of "hauling aft the main brace" and to spread the gospel of sailing among the younger generation. The club was organized by four boys, the writer, one of the number, being only twelve years of age at the time. The club grew slowly at first, but after a couple of years the members came rolling in so fast that they now number a hundred and twenty-five. The club has always been on Wall street financially, being worth several hundred dollars at present, and owning one of the first class yachts which is at the disposal of the members. The club house is located on the shores of Pearl Harbor, a large land locked harbor near which Uncle Sam is building one of his largest dry docks for the use of the dreadnoughts of the Pacific fleet. The club house is ten miles distant from Honolulu, the principal city of the group, and can be reached both by train and by boat. Most of the members come down by train on Saturday afternoons and many of the yachts are moored at the club anchorage.

The conditions to be found out here in the Mid-Pacific are ideal; this is the yachtsman's paradise. Here it is never winter, no snow, or ice, no disagreeable cold weather. The temperature very seldom falls below sixty degrees, so that the yachtsman need never stay at home for fear that he will be frozen to death should he venture forth in mid-winter.

The water conditions are just what a real devotee of the sport desires; of course, they would be somewhat terrifying to a parlor yachtsman, for by the time the swells have rolled all the way down from the Arctic, they are rather formidable looking when they strike the rugged windward coast of the Islands. It gets pretty rough out in the channels too, and many times even the hardiest sailors are overcome by *mal de mer*. However in the lee of the various islands, the water is perfectly smooth, there being often stretches of smooth water anywhere from twenty to forty miles long. Here is the yachtsman's delight. Always, there is a breeze, a good one generally, and here one can take life easy and "let her have it." There are plenty of anchorages along the lee coasts, there being many small bays with enough depth to accommodate the largest yachts; the bottom is for the most part substantial, and fish are plentiful and the swimming cannot be surpassed. The wind can generally be relied upon, the prevailing N. E. trades blowing the year round, although in the winter months, an occasional southwesterly blow comes in. One thing is sure and that is that when the wind blows, it blows with plenty of force, though seldom hard enough to necessitate a reef. Auxiliary power is not yet widely used out here, though the writer has often been caught out at night when trying to make port, and has wished that he had had a faithful little coffee-grinder to take his place in the towing dink.

The largest yacht in the islands is the *Hawaii*, the famous trans-Pacific racer which was built a dozen years ago on funds subscribed by the people of the Territory. She is a seventy-foot over all schooner and is substantial enough to travel around the world. The *Hawaii* is at present laid up preparatory to next year's trans-Pacific race.

A close rival, in point of size, of the *Hawaii* is the schooner yacht *Luka*, owned by Judge H. E. Cooper. The *Luka* is equipped with a hundred horse power auxiliary engine, and has made several trips to the Palmyra Islands, a group lying several hundred miles south of Hawaii.

The next largest yacht is the yawl *Mollilou*, the fastest sailing vessel in the Territory. She is the property of F. B. Smith and is the handsomest yacht that has ever poked her nose through the swells off Diamond Head. The *Mollilou* is fifty-six feet over all.

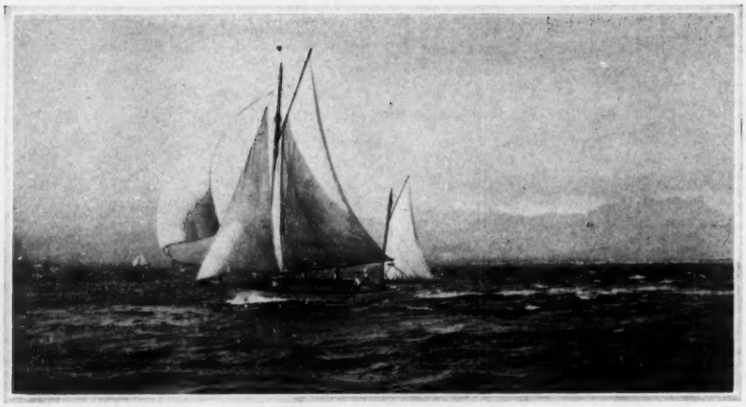
There are several of the large yachts of nearly the same length, these being the *Charlotte C*, flag-ship of the Honolulu Yacht Club; the *Kamehameha*; the *Gladys*; and the *Hawaii II*. These four, together with the *Mollilou* form the racing section of the A class of the Honolulu Yacht Club. The racing crew on each of these boats numbers about eight men, and, believe me, they have to be genuine sailormen, for when one of these little ships breaks out her full stock of racing sails, the crew has to be on the jump to keep the spars from going by the board.

The "B" class of the Honolulu Yacht Club consists of seven boats, under thirty feet over all, and on the type of the Sonder boats, skimming dishes with keels. These boats furnish some lively racing, and keen rivalry exists between their crews.

The mixed class, consisting of five boats, is rather difficult to describe. These boats are anywhere from twenty to thirty feet in length and no two are alike. They are raced on a handicap basis, so that all have an equal showing.

The Pearl class, is made up of five boats, the pride of the fleet, being little fellows of only eighteen feet over all length. They are flat bottomed, have a centerboard and carry live ballast only. They put up the classiest racing imaginable, and form a pretty picture as they come tearing down for the finish line with their spinakers set and all hands jammed aft to keep them from doing the Monte Cristo act.

There were two or three "sea-wrens" in the club fleet, but the local conditions did not suit these boats at all. They were too stubby and could not make any speed



THE 56-FOOT YAWL MOLLI-LOU IS OWNED BY F. B. SMITH AND IS CONSIDERED ONE OF THE TRIMMEST AND FASTEST SAILING CRAFT THAT HAS EVER STEMMED THE SWELLS WHICH ROLL OFF DIAMOND HEAD

when bucking into the chop which prevails in and around the sailing grounds. The "wrens" have been laid up, and some of them have been utilized for gardening purposes, being used to raise pansies and violets in.

When it comes to cruising we honestly believe that we have the finest cruising waters anywhere in the world. Every yachtsman says the same thing; he will expostulate on the various advantages to be found in his territory; the Puget Sound yachtsman will blow his horn about the fine shooting and fishing to be found in his locality; the Florida sailor will go into raptures over the fine climate to be found in his district. They are perfectly justified in their statements, but we sailormen out here in the Mid-Pacific believe without a doubt that our cruising grounds are the best in the world, for the man that loves the sea, for the man who is not afraid of a little rough water and being drenched once in a while by flying spray. There is no great rise and fall in the tides here; consequently no strong currents to buck. We are generally sure of the wind and are never afraid of being caught in ice. Nor are we afraid of losing ourselves when we sail out of sight of land, for we are sure of running into the next island.

The scenery along the windward coasts of the islands is magnificent! Walls of stone five and six hundred feet high rise perpendicularly out of the sea. Tumbling water-falls pour down the sides of these cliffs, and empty into the mighty vastness of the Pacific. Occasionally a deep valley splits these cliffs asunder, and reveals a tropical forest in all its glory! Then these cliffs become lower and a long gently sloping plain comes into view. Acres upon acres of sugar cane, the principal product of the islands, are seen stretching off into the distance. Now and then a sugar mill, surrounded by a small village comes into view. Then the landings of the various sugar plantations can be seen. Occasionally, a coasting vessel passes by enveloped in spray; truly a magnificent sight. Yes, this is indeed the yachtsman's paradise.

A leisurely cruise around the island of Oahu, our home waters, is delightful. We board our ship at the club house, sail out through Pearl Harbor, passing the drydock, the huge coaling station, the submarine repair shops, the mammoth fortifications at the entrance to the channel, and on out to sea. We head westward for Barber's Point, and all hands loll around, taking in the scenery. Nearly the entire lee side of the island is given over to sugar plantations, and we can see three immense sugar mills off in the distance. Far inland lies a range of mountains, beautiful in their rugged grandeur. After an hour's sailing we pass around Barber's Point, and some time later, come into sight of a small village called Waianae. There is a fine bay here, so we decide to run in and anchor for a while with Pearl Harbor thirty miles astern.

We anchor in two fathoms, trim ship, and deciding to fish, are rewarded with a fine big catch which we turn over to the cook to prepare for supper. We then go ashore for a swim, there being a fine beach there, and the water very invigorating. After a nice long swim, we return to our ship, and after supper play cards until a late hour. Cards is a popular form of amusement with the yachtsmen in the islands and very often inter-boat card matches take place. Next morning, bright and early, we up anchor and start on the second leg of our trip, which we decide shall end at Waialua. After about three hours' sailing, being favored with a fresh breeze, we reach our destination. We enter a fine big bay, at the head of which is the village; we see a long, broad, beach ahead of us and also a large hotel, off which we anchor. We go ashore, take in the sights. roam around the hotel grounds which are the most beautiful in the islands, and after an hour or so return to our ship. We loaf around, fishing until noon, when, having finished lunch, we set off on the next leg of our journey, deciding to stop in at Kaneohe Bay.

A long tack out to sea is made, encountering the full force of the trade winds, and meeting some fine big swells. Our ship rides over these seas like a duck, though she occasionally sticks her jib-boom down for a wetting and throws a bit of spray over her back, to cool off, as it were. Our guests, a couple of members of the *Indoor Yacht Club*, are down in their bunks, saying their prayers; poor fellows, they are finding such pleasure in counting the nail holes in the cabin ceiling. After standing out to sea for about twenty miles, the skipper decides that he can clear Mokapu Point, the most windward extremity of the Island. We tack ship, and ramble along on the port tack. My! but our little ship can travel! She is reeling off the knots like a White Star liner, the big swells seeming to make her travel all the faster instead of retarding her. Observe the scenery to leeward of us. Isn't it truly magnificent? What greens, what purples, clothe those cloud-capped mountains rising straight up out of the sea! See that forest over to the left, with its various shades of green, brown, yellow and pink. Behold the huge billows racing madly in, and hurling themselves with full force against the rugged shores, throwing great clouds of spray far up into the air. Certainly, this is a rare and inspiring sight.

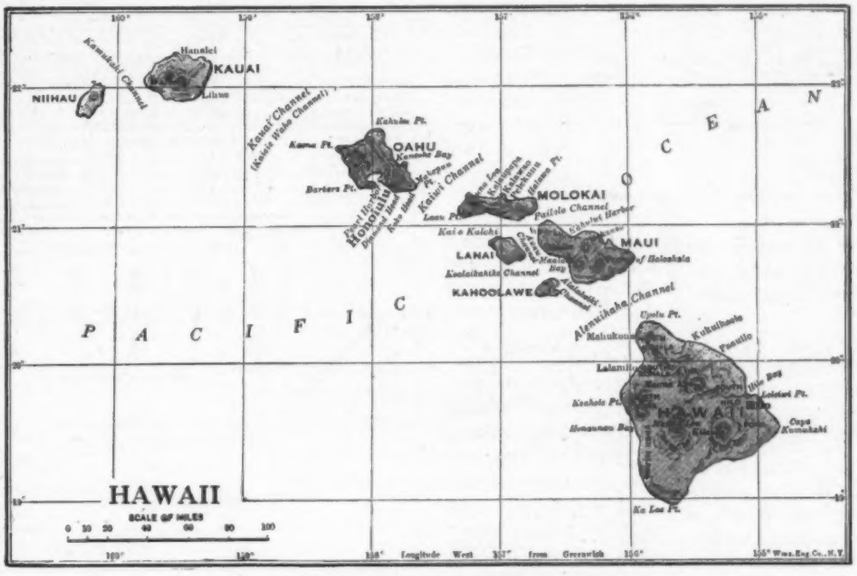
It is just growing dark when we sail into Kaneohe Bay, so we feel our way in with great care, and anchoring for the night, turn in early. The next morning we make a little side trip in the dink, cruising around over the reefs, and what a magnificent sight is revealed to our gaze, down on the bottom of the sea. Corals, blue, brown, pink and green. Yes, of all colors imaginable; marine growths of flimsy construction and of rare beauty; sea-weeds, fish, rocks and the whole terrain make up a true and wonderful fairyland, and this at the bottom of Kaneohe Bay!

MASSIVE WALLS OF STONE FIVE AND SIX HUNDRED FEET HIGH REAR THEIR PERPENDICULAR BULK FROM OUT THE BLUE PACIFIC AND MAKE THE SCENERY ALONG THE WINDWARD COASTS ONE OF RUGGED GRANDEUR

We weigh anchor at ten o'clock and head on down the coast for home. We pass several small islands off the Oahu coast, and sail across the mouth of Waimanalo Bay and on around Makapu Point into sight of Koko Head. Passing this, we see Diamond Head, and the outskirts of Honolulu. In an hour or so, we are off Waikiki, a district where the best swimming in the world is to be found. Huge combers race at break-neck speed toward the shore and on these, canoes laden with pleasure seekers, and swimmers on surf-boards are enjoying themselves to the full. We pass Honolulu harbor, which is full of ships from all parts of the world, and in another hour reach our destination, the yacht club anchorage in Pearl Harbor.

Cruises are often made to the other islands, especially to Molokai, the island lying next to Oahu to the eastward. On the west end of this island, there are a number of small bays, and the Honolulu Yacht Club's annual Labor Day cruise is to this place. Here fish can be caught as fast as one can bait a hook, and if one wishes fine deer shooting, he has but to hike several miles inland to a dense forest where the game can be found in abundance.

Fishing trips to Lanai, another one of the islands, are quite frequent, but the anchorage off this island is poor, and there are but two or three landings, so that one's time must be spent entirely on the water. However, if one cared to risk a landing, he would be rewarded by finding thousands of goats which roam about destroying all vegetation. There are no game laws on this island, so one can shoot to his heart's content.



EIGHT CORAL FRINGED ISLES COMPRISE THE SANDWICH OR HAWAIIAN ISLANDS

Yacht racing is a sport which is pursued with as much enthusiasm here as anywhere else. The Honolulu Yacht Club has a racing fleet to be proud of, and many are the exciting contests held under its auspices. First, let's look over the list of races for the class A boats.

First in importance is the annual ocean race to Kahului, Maui, a distance of a hundred miles, sailed for the most part out in the broad sweep of the Pacific, where the full force of wind and wave are encountered, and where the real yachtsman is at home. The record for this race is held by the *Kamehameha* which sailed the distance in twenty-two hours. The trophy contested for is the Maui Challenge Cup, an immense solid silver vessel presented by the people of Maui. The trophy remains in the winner's possession for a year, when some rival challenges and it is again raced for.

Second in importance is the annual race around Oahu for what is known as the Governor's cup. This is also a challenge trophy, and some lively racing takes place each season for the possession of this coveted prize. The distance around Oahu is nearly a hundred miles, and is a combination of rough and smooth water sailing.

Then there are the Irwin Cup and the Hawaiian Challenge Cup roces, which take place annually. These races are over a thirty-mile course, from Honolulu to Koko Head, then to the entrance to Pearl Harbor and finish off Honolulu. These are both smooth water races, and the big fellows make a pretty sight as they go scooting down the coast with all sails set.

Each year the Honolulu Yacht Club donates a trophy for a series of races for the "A" boats which are sailed along the lec coast, generally from Pearl Harbor to Koko Head and return. Five races make a series, and the boat winning the greatest number of points is awarded the prize.

There are several trophies raced for by the "B" class boats, and most of these races are sailed between Pearl Harbor and Diamond Head. The "B" boats put up some lively racing too, and they are a valuable addition to the club fleet.

The mixed class races are generally held in Pearl Harbor, and the Yacht Club annually awards a trophy to the speediest "M" boat. There is keen rivalry among the skippers of these boats, each sailing a different type of craft and claiming that his particular model has the most speed.

The classiest racing is put up by the five "Pearl" Boats, which are raced on a scratch basis, and no one boat is the fastest. The keenest of rivalry exists and the races are talked of the year round. The little fellows' racing ground is in Pearl Harbor where several series of races are sailed each season. Several of the directors of the club have presented trophies to be raced for, and the club presents an annual trophy to the best boat of the season. Several of the merchants in Honolulu have occasionally presented the regatta committee with trophies to be raced for, and these are divided between the Pearl class and the Mixed class. On the whole, the racing is the best that could be desired.

The object of this article has not been to enlarge upon the beauties of the Islands, to dwell upon the manifold charms of the Pali or of Waikiki, but to acquaint interested sportsmen with the possibilities, real and potential, of yachting in Hawaii.

Situated as we are, far from "the maddening crowd," our amusements are necessarily limited; living as we do in the Mid-Pacific, our attention turns unerringly to aquatic sports; surrounded as we are, by eternal summer, yachting, that pastime of a land of balmy breezes and summer seas, has taken a permanent place among all the out door sports in Hawaii-nei.

Fundamentals of Naval Service

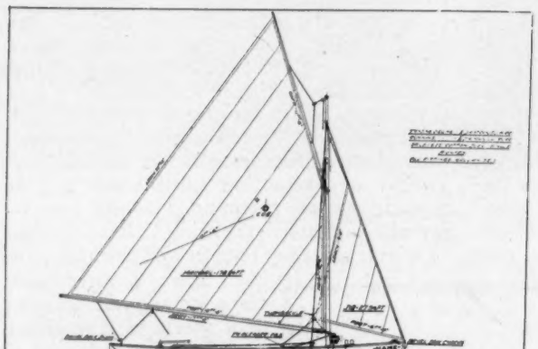
THE call for men to man our ships of war has brought forward many thousands of yachtsmen and many young men have of course enlisted in the naval service who have had no experience about craft of any kind. The requirements of service in the United States Navy naturally calls for the acquirement of many things which civilian life cannot well employ, but which are of vital import afloat in time of war.

To the many young men who are about to enter the naval service and to all who are interested in this important service, this handy pocket manual will prove of valuable assistance, epitomizing as it does a great deal of important and necessary information regarding the duties aboard ship. The naval policy, past and present, the principles of naval strategy, a clear outline of sea power and the battle fleets of to-day are briefly yet clearly described. In addition the organization of the navy and the manning of a warship with a summary of training required, is well covered, while the chapters devoted to navigation, seamanship and a sailor's duties are clearly told. *Fundamentals of Naval Service* is a very useful manual which gives a great deal of elementary and necessary knowledge in a handy and compact form. The book is published with the approval of the U. S. Navy Department and is written by Commander Yates Sterling and published by J. B. Lippincott Company at East Washington Square, Philadelphia.

Constructing a 19-Foot Sloop

S. S. RABL

PERHAPS the things which influence a person to build a boat are well known to every one, but regardless of this I will make



a short review of them for our friends who are new to the yachting game.

The greatest, perhaps, is to enjoy the cleanest and most exhilarating of sports which we poor mortals here below are gifted with.

The next consideration is cost. A man may enjoy something ever so much but his pocketbook is the real limit of his pleasure.

Then again some men build boats for the sheer love of building them. The things which influenced me are a combination of all these and I will attempt in this article to describe the building of a boat which is now waiting for her last coat of paint to dry so that she may slide into the element which is to be her home.

Last fall I designed the boat whose plans are published here. I wanted a boat that was fast and comfortable, and one in which a week's cruise could be made should I care to make it.

Just a few more words in reference to the building of a boat of this type. Although the cost may look big at first remember that this may be carried over the entire period while she is building so that it will be like putting money in a bank every week by purchasing the items a few at a time.

We will assume that all lumber is at hand to start building and that all tools are sharp and just itching to go to work.

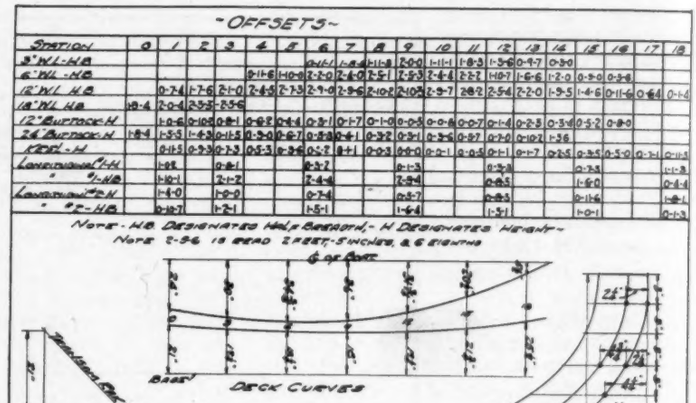
The first thing to do is to construct the keel mould. On the plan-marked floor figures are given the heights of this member. These figures are "moulded," that is to the inside of the planking so that 1½ inches or the thickness of the keel will have to be deducted from them to make the mould.

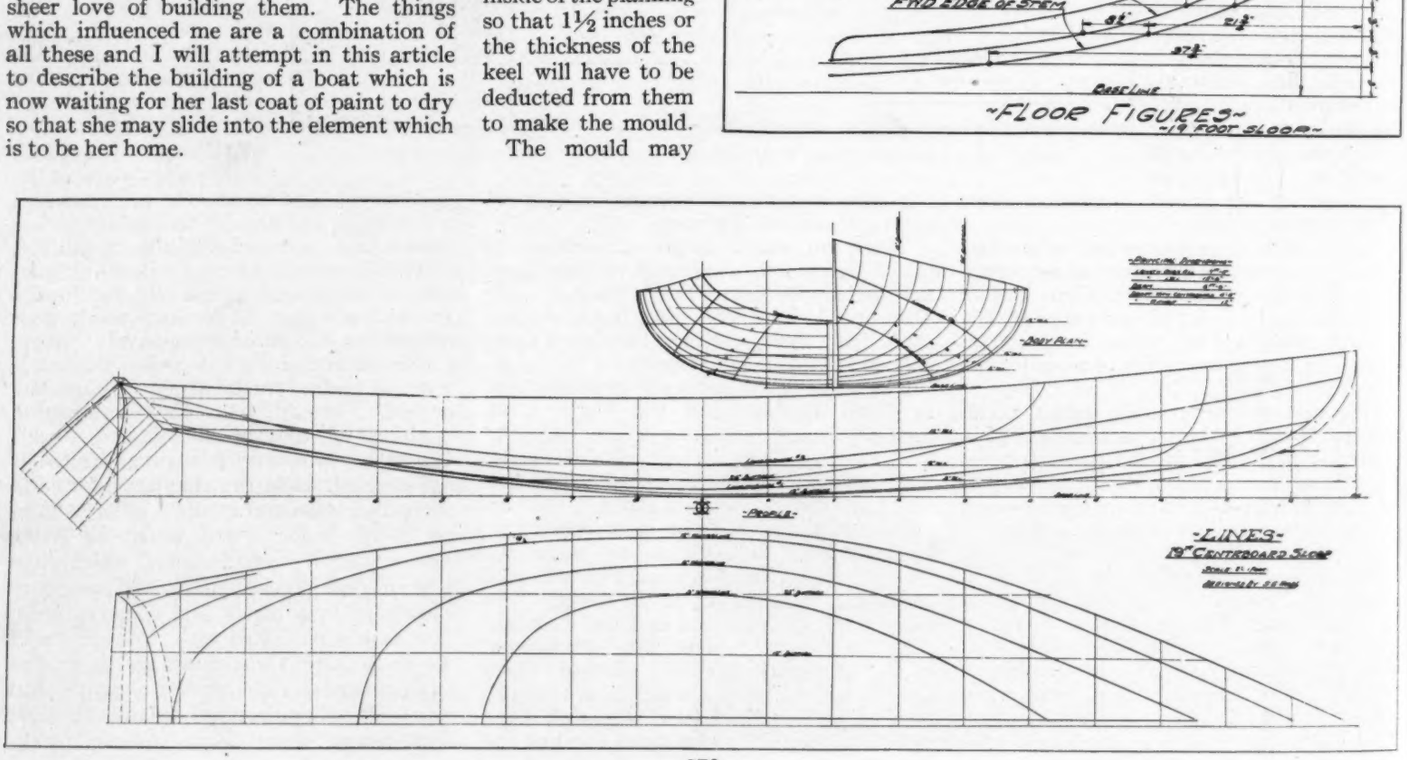
The mould may be constructed of 2 in. by 6 in. timbers and the keel fastened to it with screws or nails which will be removed later. The keel is given as 1½ in. by 3 in. on the plans but I would advise a piece of 1½ in. by 6 in. tapered to 3 in. at the ends. My keel was not strong enough and was reinforced with a ¾ in. by 6 in. plank at each side.

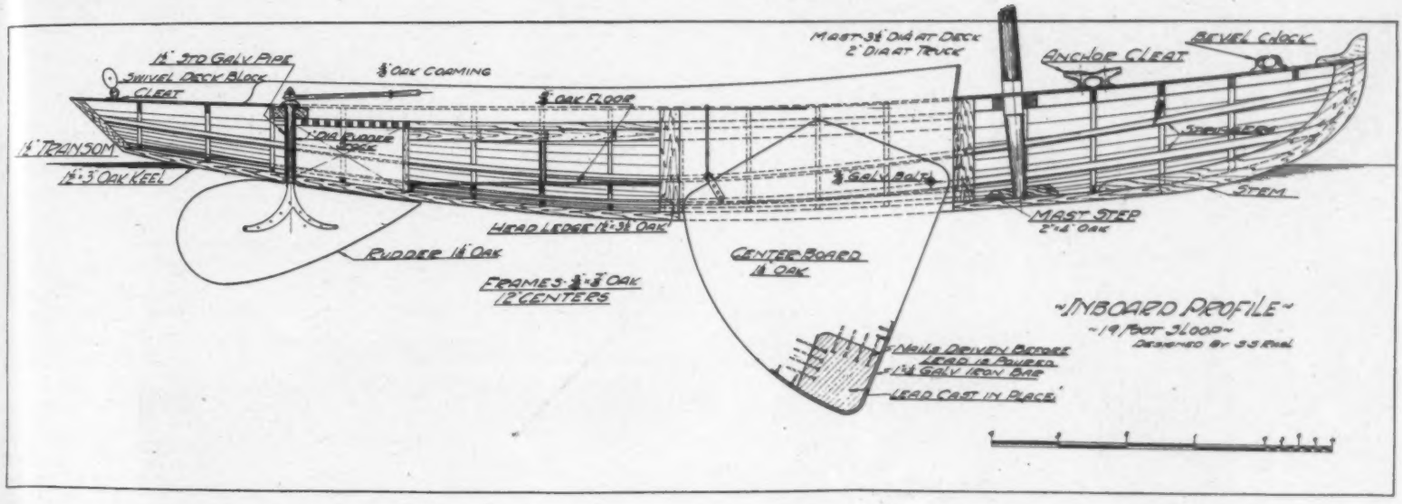
The centerboard box is erected on the keel before it is fastened down, fasten it with brass screws ¼ in. diameter.

The stem is next made and fastened to the keel with ⅜ in. galvanized bolts.

When the keel and stem are assembled,

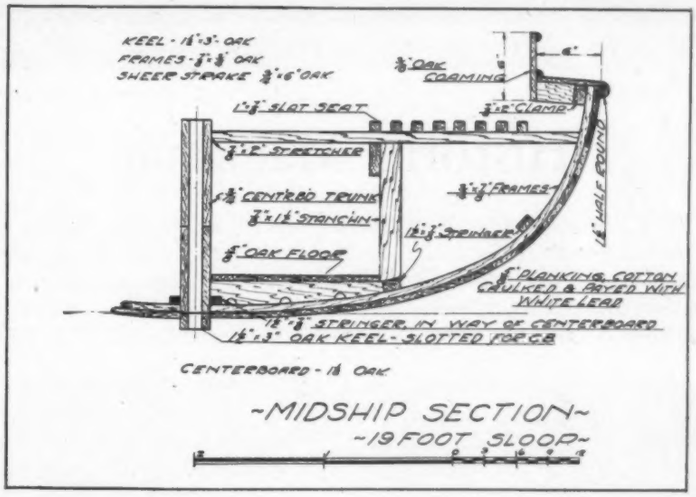






moulds are made for the body shape at frames 3–6–9–12 and 15 from dimensions given on the floor figures. To make these moulds take some smooth 7/8 in. yellow pine boards and fasten them together with a batten in their center. Lines parallel to the bottom board are next drawn 3 in., 6 in., and 12 in. away from it. A spot is now selected as the centerline and a line is squared up from the bottom board through it. Lines are drawn parallel to this at 12 in. and 24 in. each side of it, the heights and half breadths are next spotted off on these lines and also the deck figures. A thin batten about 3/16 in. square is run through the spots and a line transferred to the planks. The planks are next trimmed off to this line. These moulds are now set up in their proper places. The moulds in way of the centerboard box must be cut to suit it and the moulds and whole structure braced to the floor or ceiling. The sheerstrake cannot be stringer which is fastened on it.

The sheerstrake which should be 4 in. by 3/4 in. oak tapered fastened around the

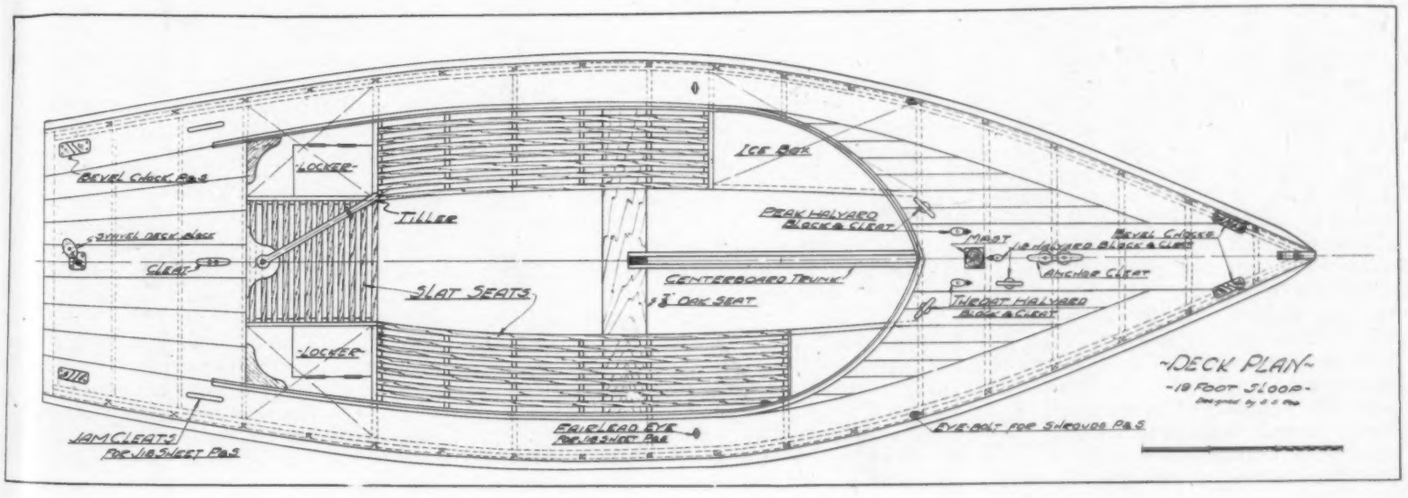

KEEL - 1 1/4"x3" OAK
FRAMES - 1"x3/4" OAK
SHEER STRAKE 3/4"x6" OAK
3/8 OAK CORMING
1 1/2" SLAT SEAT
1/2" CLAMP
1/2" STRETCHER
3/4" CENTERBD TRUNK
3/4"x1 1/2" STANCHN
1 1/2"x3/4" FRAMES
1 1/2"x3/4" STRINGER
1/4" HALF ROUND
3/4" OAK FLOOR
1/4" PLANKING, COTTON CAULKED & PAYED WITH WHITE LEAD
1 1/2"x3/4" STRINGER IN WAY OF CENTERBOARD
1 1/2"x3" OAK KEEL - SLOTTED FOR CB
CENTERBOARD - 1 1/4 OAK
"MIDSHIP SECTION"
"19 FOOT SLOOP"

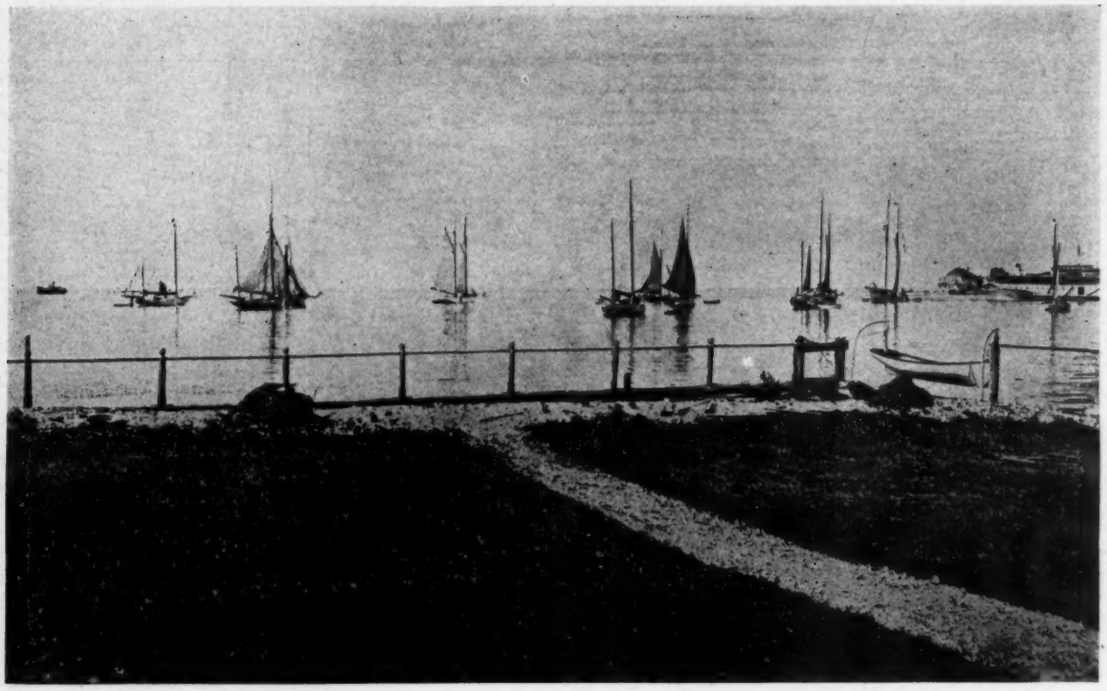
made from a straight board it will take at least a 10 in. piece of timber to make this. The transom is made and fitted to the end of the keel and sheerstrake and battens are bent around the moulds ready for the ribs.

The ribs are next steamed and bent in shape by being pulled against the frames and when they are dry they should be fastened to the sheerstrake by brass screws. In my boat, to avoid using floors, I let the starboard ribs run across the keel aft of their station and the port ones run forward of it giving about 12 in. overlap each side of the keel.

The bottom and top planks are put on and then the filler or closing strakes are inserted. Do not remove the rib battens until it is necessary to fit a plank. The boat is next caulked and the seams are filled with a mixture of white

(Continued on page 275)





MACKINAC ISLAND HARBOR SHOWING PART OF FLEET ON ANNUAL YACHT RACE—CHICAGO TO MACKINAC

Historic Mackinac

In the Waters of Lake Huron, Away up in the Northeastern Corner, Standing Guard Like a Faithful Sentinel Over the Straits of Mackinac, Which Connects Huron with Lake Michigan, is a Crescent-shaped Island Which for Long has Enjoyed the Undisputed Title of Fairy Island—a Well Deserved Appelation No One Acquainted With the Isle Can Deny, for There are Very Few Bits of Rugged Greenery in Any Clime That Can Boast a More Interesting History, Display Such a Wealth of Scenic Charm or Furnish so Many Entertaining Myths and Legends as the Historic Island of Mackinac.

FASCINATING and picturesque is the history of the discovery, exploration and settlement of the Mackinac country. At the outset we meet with one of the most romantic of the European peoples; French explorers, priests, traders and commandants were destined to be for nearly two centuries the dominant figures in the region of the Great Lakes, and in human interest the story of their trials, triumphs, defeats and achievements has no rival in North America.

Nearly three hundred years ago Jacques Cartier, "the bold mariner of St. Malo," was commissioned by Francis the First, King of France, to find a passageway through the newly discovered lands to the Golden East. In 1535 he reached the site of Montreal; as he gazed from the elevation which he named Mont Royale, little did he dream of the strange secrets hidden in the wilderness before him. Cartier and his men had not found a route to Cathay, but they had visited the gateway through which later explorers were to find their way to Mackinac.

In 1608 Samuel de Champlain, "Father of New France" founded Quebec and in 1609 discovered the beautiful lake which bears his name—though on this occasion he gained the lasting enmity of the Iroquois. Champlain had early been told of a strange people who dwelt in far away lands beyond Lake Huron by the sea, who for this reason were called by the Algonquins "Men of the Sea." He had heard also of a people without hair or beards, whose costumes and habits reminded him of the Tartars described by Marco Polo—a people who came from the west to trade with the "Sea-tribe," making their journeys in large canoes over a "great water." A lively imagination on the part of the white men easily converted these hairless traders into Chinese or Japanese. Jean Nicolet, whom as early as 1618 Champlain had sent among the Indians to learn their language, had heard these stories, and having sat in the council of the Indians he was well fitted for the mission.

He embarked in the Huron country, with seven savages, and after passing many small nations the party arrived at their destination, and fastened two sticks in the earth, and hung gifts upon them, so as to tell these tribes they were friends. Nicolet wore a grand robe all strewn with flowers and as soon as the savage women and children saw him thus arrayed they fled at sight of a man who carried thunder in both hands—for thus they called the two pistols which he carried. After concluding his peace mission, Nicolet continued to serve as Agent and Inspector of both the French and the Savages, by whom he was equally esteemed.

The Chinese costume which Nicolet wore shows that he conceived his mission to be that of ambassador of the French to the people of Asia. In reality he arrived among the Winnebago Indians on the shores of Green Bay. The "great water" was probably the Wisconsin or the Mississippi. On his way to the "People of the Sea" Nicolet and his companions, paddled their canoes along the eastern and northern shores of Lake Huron and paused at the rapids of the Sault. They camped here and on the south shore, but instead of trying to pass the rapids, which would have led to the discovery of Lake Superior, they went south and west along the coast line through the straits of Mackinac, where it is likely that the beauties of the Fairy Isle attracted the party and invited them to camp on its shores. Just a century after Cartier first approached the gateway of the St. Lawrence, Nicolet reached the vicinity of Mackinac.

The story of French exploration, the tale of Jacques Marquette whose life work is attested by a statue in the island, and his name commemorated in Michigan by a river, a county and a city, the equally interesting narratives of La Salle and the Griffin, the Coureurs de Bois, the romance of the American Fur Trade, Indian battles and massacres and the War of 1812, are but a few of the many fascinating chapters in the history of Mackinac Island, which space prohibits other than a very brief summary of its varied episodes.

A FINE VIEW AT MACKINAC SHOWING A CORNER OF FORT MACKINAC AT THE LEFT AND A VIEW OF THE HARBOR FRONT

Of the Mormon occupation of Beaver Island and the story of James Jesse Strang who claimed at the death of Joseph Smith, the Mormon prophet, to be his successor and anointed by the Lord to be "teacher, ruler, prophet and protector" of the Mormons, an excerpt of Miss Wolson's vivid and humorous heroic tale is well worth a paragraph.

"Big Beaver Island, just outside the western gateway, had been taken by the Mormons after a bloodless contest with the gulls who were the original inhabitants. Driven from the Eastern States, hither had the saints migrated in small bands, and gradually a town grew up, a temple was built, and a king chosen to rule over the settlement. For some time the saints confined themselves to cultivating their land and catching fish, only occasionally trapping some discontented wife on the mainland, by way of a little innocent variety. But waxing fat and lazy, they concluded that labor was unworthy their vocation, and they proceeded to levy toll on passing vessels. When nights were dark and stormy, they set out lights and lured the unsuspicious mariners to destruction on their shores, reaping the reward of their labors in the numerous wrecks on the beach. These acts inflamed the wrath of the worldly inhabitants of Mackinac, and one day when it was discovered that a beautiful French girl had been enticed away to join the harem of King Strang, their indignation resolved into action. A fleet, much resembling the primitive flotillas of Homer's day, was prepared for battle, manned by a motley crew of French and half-breeds, while a sprinkling of uniforms from the fort gave Uncle Sam's sanction to the enterprise. A pugnacious steam-tug led the way, bearing a small cannon proudly on its quarter-deck and displaying the Stars and Stripes nailed to the mast. A fleet of Mackinac boats sailed fiercely alongside, filled with Islanders armed with rusty shot guns and antiquated pistols, while in the rear, paddling for dear life to see the sight came the noble race of 'Lo' in their dirty blankets.

SUNSET OVER THE WATER AT MACKINAC IS A BEAUTIFUL PICTURE TO BE ENJOYED AND NOT QUICKLY FORGOTTEN

"Passing the western gateway, Big Beaver loomed in sight and the City of the Saints was shortly afterwards assaulted by the ferocious Islanders. The steam-

tug took up position and opened fire upon the town, while the land forces swarmed ashore and did prodigious execution with their superannuated pistols. The female saints made a brave resistance when they saw their deserted husbands among the invaders, but the prophets fled to the protecting woods, whence they were dragged one by one to enjoy the delights of tar and feathers. King Strang himself was taken prisoner and carried aboard the flagship, but vengeance smote him by the hand of one of his flock and he paid for his many sins with his life. The conquering fleet returned in triumph to Mackinac and the scattered remnant of the Mormons forsook Big Beaver in haste, turning their faces toward the setting sun, where gleamed before them the glorious City of the Saints, and Big Beaver was restored to the original aristocracy of the loons, and seagulls."

Of all the features of Mackinac Island, the most striking object seen as one approaches from the Straits, is the historic fortification which crowns the bluff overlooking the village and the crescent shore. This is Fort Mackinac. As seen in the distance it awakens a mixed feeling of the glamour of the frontier fortress and of the old-world castle. Its thick walls of whitish limestone, crawling along a bold and lofty elevation, lead to the sally-ports formerly defended by cannon. At the angles of the work stand blockhouses of logs loopholed for muskets and in olden times having added protection of pickets, palisades or stockades against the attack of the valorous red man. A ramble through Fort Mackinac is one of the delights of a visit to the Island, and few places afford finer views than does its lofty parapet, from which one may obtain "charming and hardly parallelled visions of sunrise and sunset glories, gilding the floods which spread their mirroring faces around the Island." A noted traveller has said that there is nothing in the Mediterranean surpassing the marine view seen from the heights of Old Fort Mackinac. Several writers have called it the "Gibraltar of America."

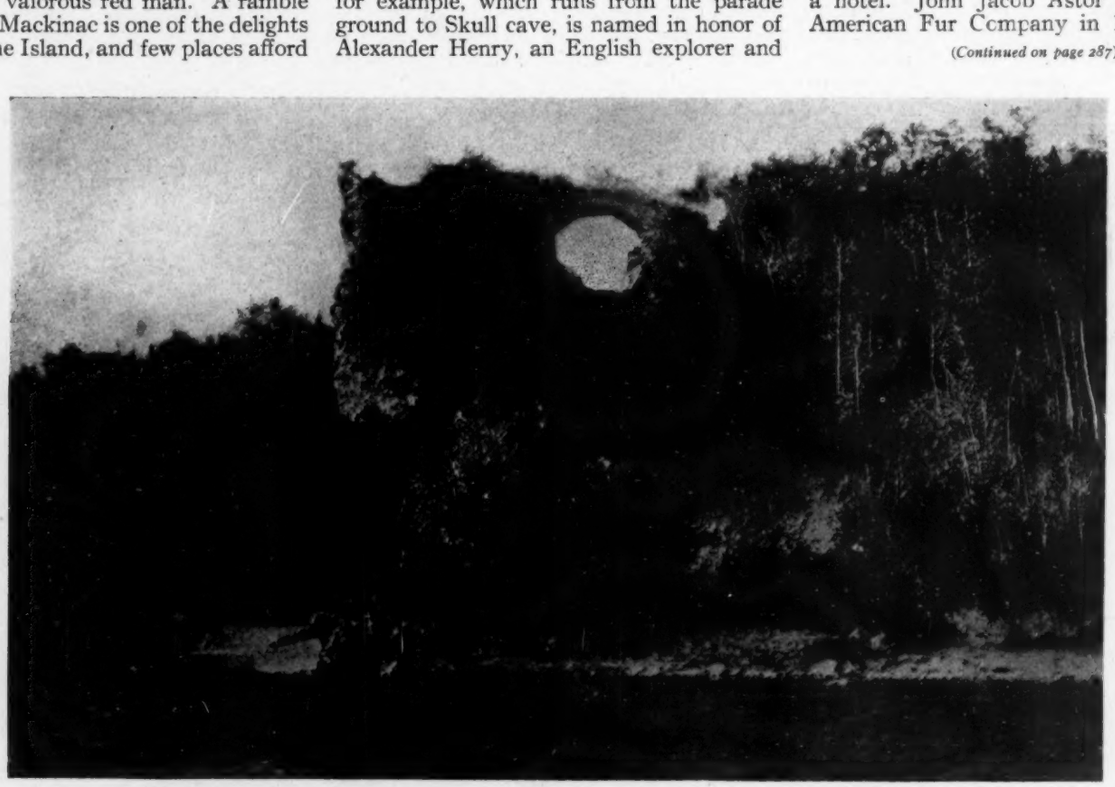
In 1873 some 1,000 acres to the south of the village of Mackinac was set apart for a national public park, "for the comfort and pleasure of all persons, and the park shall be under the exclusive control of the Secretary of War." In 1895 the park was turned over by the government to the State of Michigan, and a board of commissioners was appointed to manage and control the Mackinac Island State Park, which includes 1,041 acres of which 500 are covered with hardwood—400 of spruce, hemlock and other soft woods and the balance cleared land. Old Fort Mackinac, begun in 1780, with its various buildings, comprises part of the Park, which is provided with drives, paths and trails. There are more than forty miles of roads, with over sixty miles of Indian trails and paths, and a boulevard shore drive runs entirely around the Island, distance of about nine miles.

Mackinac Island has hundreds of interesting places of interest and about most of them hang the romance of myth, legend and association of some Indian, Explorer or adventurous Trapper. The *Henry Trail* for example, which runs from the parade ground to Skull cave, is named in honor of Alexander Henry, an English explorer and fur trader, who narrowly escaped death in the massacre at Old Mackinac in 1763. He owed his life largely to a friendly Ojibway chief, to which he was taken by a friend after the massacre. According to his own account he spent nearly a year in Indian garb, following the fortunes of Wawatam and his family.

Arch Rock, is a natural arch of rock, a counterpart of the Natural Bridge in Virginia. According to Indian tradition this magnificent arch, which from some points of view seems suspended in air, was formed by the Giant Fairies, who once inhabited the Island, and who may still be seen about this chasm of wild grandeur on moonlight nights by those who have the eye to perceive them. Geologically the Arch is a calcareous formation, which was among the first points on the Island to project above the water in ancient times. It was formed by the action of receding waters wearing away and loosening great masses from its sides. The summit of the arch is a hundred and forty-nine feet above the lake level with a span of over fifty feet. Legendary lore records that Arch Rock was the gateway through which the Giant Fairies entered the Island. Arch Rock is approached by an old Indian trail from the northern corner of Marquette Park, up the bluff to Cass Cliff and ends at this point.

Astor House, named for John Jacob Astor, is a building formerly the headquarters of the American Fur Company for the Mackinac country and is now utilized as a hotel. John Jacob Astor organized the American Fur Company in 1809 and was

(Continued on page 287)



ARCH ROCK IS A NATURAL SPAN OF ROCK, WITH A SPAN OF 50 FEET—A COUNTERPART OF THE NATURAL BRIDGE IN VIRGINIA

The Development of the Navy and the Merchant Marine

THE development of the navy during the first year of the war has given the greatest satisfaction. Its growth and achievements during this period may be epitomized in the following paragraphs:

Strength of the navy to-day is nearly 21,000 officers and 330,000 enlisted men; strength a year ago was 4,792 officers and 77,946 enlisted men.

Estimated total expenditures of the navy during the first year of war: Disbursements and outstanding obligations, $1,881,000,000.

Total naval appropriations, real and pending, $3,333,171,665.04.

American destroyers arrived at a British port to assist in patrolling European waters 28 days after the declaration of war.

There are now four times as many vessels in the naval service as a year ago.

Nearly 73,000 mechanics and other civilian employees are working at navy yards and stations.

When war was declared, 123 naval vessels were building or authorized, and contracts have been placed since that time for 949 vessels.

More than 700 privately owned vessels have been purchased or chartered by the navy.

Six new authorized battleships are designed to be of 41,500 tons—the largest battleships in the world.

Our 35,000-ton cruisers, 35 knots, will be the fastest in the world, their speed equaling the fastest destroyers.

Prompt repairs of 109 interned German ships, practically wrecked by their crews, added more than 700,000 tons to our available naval and merchant tonnage.

The navy has developed an American mine believed to combine all the good points of various types of mines, and is manufacturing them in quantities.

During the year the latest type of naval 16-inch gun was completed for our new battleships; it throws a projectile weighing 2,100 pounds.

The navy has in its possession now a stock of supplies sufficient for the average requirements for at least one year.

Several hundred submarine chasers, built since the war, have been delivered to the navy by 31 private concerns and six navy yards; many of these boats have crossed the Atlantic, some in very severe weather.

Naval training camps have a capacity of 102,000 in summer and 94,000 men in winter.

Up to date congress has authorized $2,034,000,000 of which $1,135,000,000 has been appropriated, for the United States Shipping Board and the Emergency Fleet Corporation; on March 1st, 1918, $353,247,955.37 of this sum had been expended.

The Emergency Fleet Corporation had requisitioned March 1st, 425 steel vessels and contracted for 720 steel vessels, making a total of 1,145 steel ships, of an aggregate dead-weight tonnage of 8,164,508 tons; it had let contracts for 490 wooden ships, aggregating approximately 1,715,000 dead-weight tons; it had repaired and put in operation 788,000 dead-weight tonnage seized from Germany and Austria.

On March 5th the building program of the Emergency Fleet Corporation was being carried on in 151 plants.

Total estimated expense of the United States Government in the first year of the war, without loans to the allies, is $12,067,278,679.07.

To help meet this expense, the treasury department floated $6,616,532,300 subscriptions to Liberty bonds.

Bonds, certificates of indebtedness, War Savings certificates, and Thrift stamps issued by the treasury up to March 12, totaled $8,560,802,052.96.

The United States Government had loaned to foreign governments associated in the war on March 12, 1918, $4,436,329,750.

To March 12 the war risk insurance bureau had issued policies for a total of $12,465,116,500 to the armed forces.

MISS MAL-DE-MER

MISS Mal-de-Mer, with pea green Hair,
Turns all the Rose of Life a Blare;
She usually, is found at Sea
And hated there, so Dreadfully,
That when you meet, you'd beat retreat,
If you could only find a Street.
Your Head it reels, your Stomach feels
As though it had no use for meals.
The one word Fat, is a word that
Will send the strongest to the mat.
A Dish of Fish, will make you wish
That you instead were food for fish.
She's Hated so, Some folks won't go,
(In case they'd meet her), for a row.
She makes folks mad, She makes 'em sad,
And when they lose her, Jolly glad.
Ain't able yet, a chap to get
Miss Mal-De-Mer to own he's met.

C. HUGHES.

Winners, 1917

WINNERS, an interesting booklet that gives the records of the winning yachts for the racing season of 1917, has been issued by Edward A. Smith & Company who for a number of years have published it, believing that those who are interested in yachting and racing find in it information well worth having. Edward A. Smith & Company, as every one knows, manufactures one of the best varnishes—Spar Coating by name, and Aquitite, a varnish especially adapted for hurried work—it dries quickly and will not turn white.

Winners will be sent regularly to the address of any of YACHTING's readers either by requesting it of YACHTING or direct of Edward A. Smith & Company, West End Avenue, 6th and 7th Streets, Long Island City, N. Y.

Constructing a 19-ft. Sloop

(Continued from page 271)

lead and whiting, the hull having been planed and made smooth beforehand. Rigging and interior are left to the builder's individual taste but by all means don't rush the job.

The cost perhaps is the thing which every one will be interested in and it is given here:

HULL

Oak framing	$7.25	
Cypress planking	38.00	
12 lbs. of galvanized nails	2.00	
Brass screws	5.00	
Total for hull		$52.25

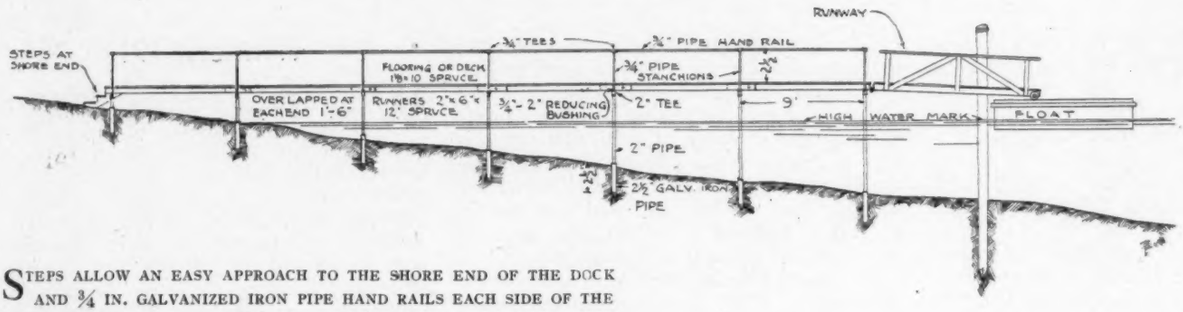
FITTINGS

Bronze blocks	$9.00	
Fairleads	2.00	
Mast rings	.75	
Snap hooks	2.75	
All rope	6.00	
Cleats and chocks	3.00	
Total fittings		23.50
Miscellaneous, paint, etc		9.25
Sails		13.20
Total		$98.20

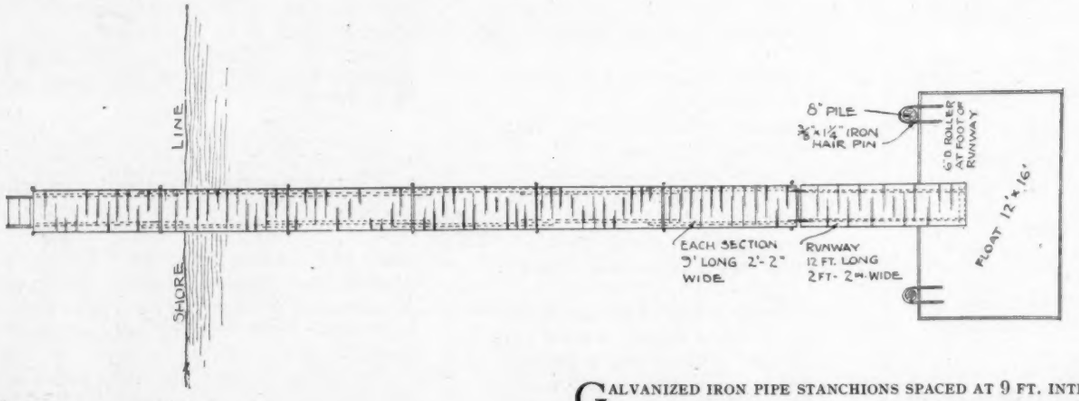
I received a bid of $40.00 on the sails but the mate made them at a cost of $13.20. There were several items which I had on hand from previous boats which would amount to about $25.00 so we can safely say that this boat will cost $150.00 if the sails are purchased.

One Good Way To Build a

On Tidewater It From Which, at or Land Without One Designed for

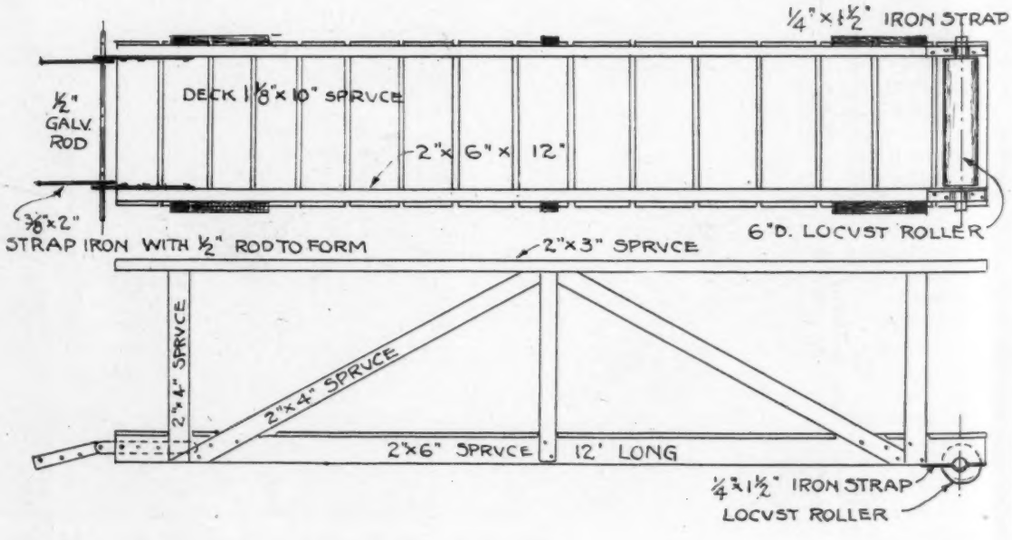


STEPS ALLOW AN EASY APPROACH TO THE SHORE END OF THE DOCK AND ¾ IN. GALVANIZED IRON PIPE HAND RAILS EACH SIDE OF THE 2 FT. 2 IN. WIDE WALKWAY LEND SECURITY WHILE ONE STROLLS OFF SHORE TO THE FLOAT AND CONNECTING RUNWAY. THE FLOAT IS SECURED BY TWO 6-IN. PILES ABOUT WHICH STRADDLE HAIR-PIN LIKE IRON STRAPS WHICH ALLOW IT TO RAISE OR FALL WITH THE TIDE



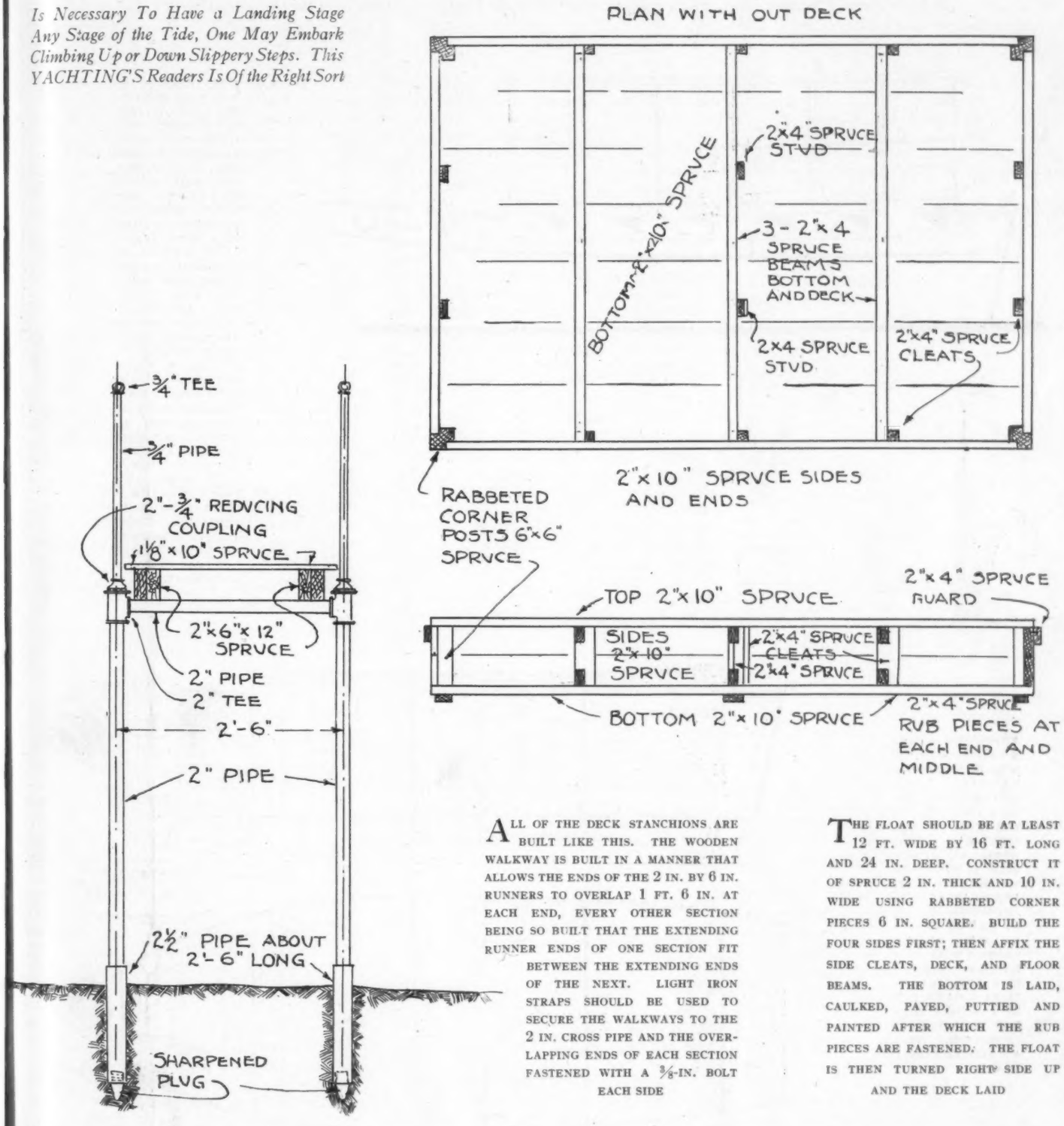
GALVANIZED IRON PIPE STANCHIONS SPACED AT 9 FT. INTERVALS AND OF PROPER LENGTHS TO SUPPORT THE DOCK IN A LEVEL POSITION, APPROXIMATELY 2 FT. ABOVE MEAN HIGH WATER, SLIP INTO 2½ IN. GALVANIZED IRON PIPE FOOTINGS WHICH ARE DRIVEN IN PLACE AT EXTREME LOW TIDE. THUS THE DOCK STANCHIONS MAY BE EASILY ERECTED EACH SPRING AND UNSLIPPED AGAIN IN THE FALL

THE RUNWAY IS BUILT OF SPRUCE WITH 2-IN. BY 6 IN. BY 12 FT. RUNS, 1¼ IN. BY 10 IN. BY 2 FT. 2 IN. DECK, 2 IN. BY 4 IN. STANCHIONS AND TRUSS WITH 2 IN. BY 3 IN. HAND RAILS EACH SIDE. IT SWINGS AT THE DOCK END ON FLAT IRON STRAPS WITH A ½ IN. GALVANIZED IRON ROD THRUST THROUGH THEM THUS FORMING A SUBSTANTIAL HINGE. THE FLOAT END IS FITTED WITH A LOCUST, OR OTHER HARD WOOD ROLLER, WHICH PLAYS BACK AND FORTH ACROSS THE FLOAT AS IT LIFTS AND FALLS FROM THE ACTION OF SEA AND TIDE



Dock, Float and Runway—

Is Necessary To Have a Landing Stage Any Stage of the Tide, One May Embark Climbing Up or Down Slippery Steps. This YACHTING'S Readers Is Of the Right Sort

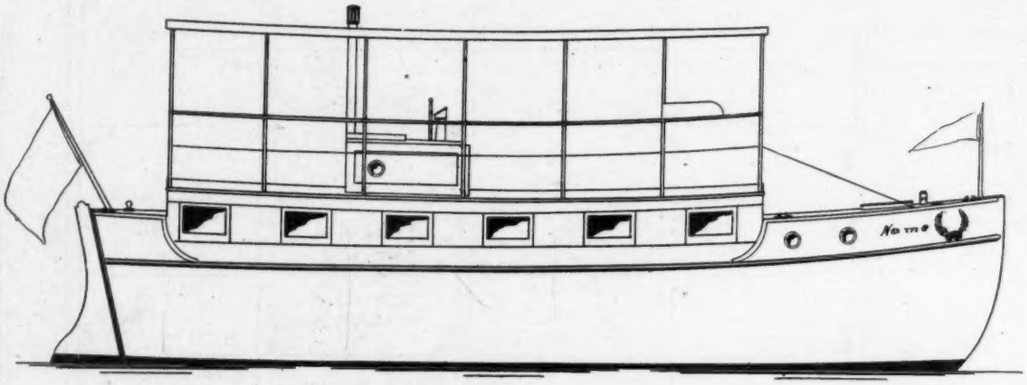


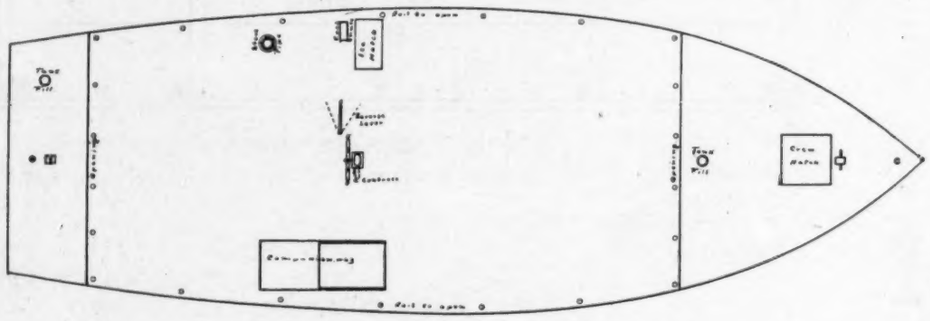
ALL OF THE DECK STANCHIONS ARE BUILT LIKE THIS. THE WOODEN WALKWAY IS BUILT IN A MANNER THAT ALLOWS THE ENDS OF THE 2 IN. BY 6 IN. RUNNERS TO OVERLAP 1 FT. 6 IN. AT EACH END, EVERY OTHER SECTION BEING SO BUILT THAT THE EXTENDING RUNNER ENDS OF ONE SECTION FIT BETWEEN THE EXTENDING ENDS OF THE NEXT. LIGHT IRON STRAPS SHOULD BE USED TO SECURE THE WALKWAYS TO THE 2 IN. CROSS PIPE AND THE OVERLAPPING ENDS OF EACH SECTION FASTENED WITH A 3/8-IN. BOLT EACH SIDE

THE FLOAT SHOULD BE AT LEAST 12 FT. WIDE BY 16 FT. LONG AND 24 IN. DEEP. CONSTRUCT IT OF SPRUCE 2 IN. THICK AND 10 IN. WIDE USING RABBETED CORNER PIECES 6 IN. SQUARE. BUILD THE FOUR SIDES FIRST; THEN AFFIX THE SIDE CLEATS, DECK, AND FLOOR BEAMS. THE BOTTOM IS LAID, CAULKED, PAYED, PUTTIED AND PAINTED AFTER WHICH THE RUB PIECES ARE FASTENED. THE FLOAT IS THEN TURNED RIGHT SIDE UP AND THE DECK LAID

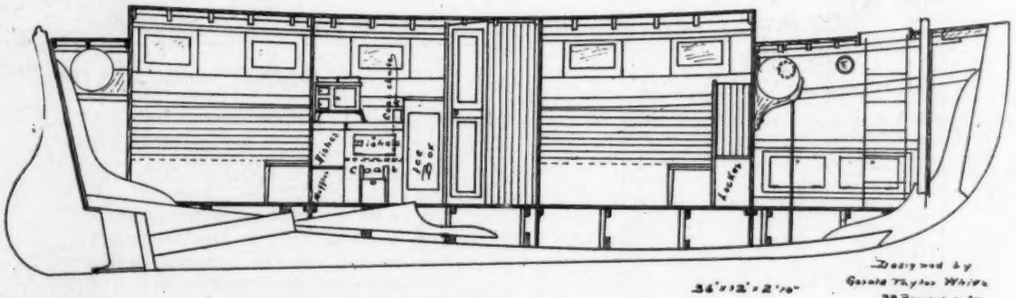
An Original Houseboat Cruiser

The Usual Houseboat Possesses Plenty of Room But Is a Slow Craft Under Power and While It Is a Rather Big Undertaking to Combine in a 36-Foot Craft, Good Accommodations with Fair Cruising Speed and Seaworthiness of Hull, This Combination Is Very Cleverly Accomplished in These Plans of a Houseboat That Is Different from the Ordinary Craft

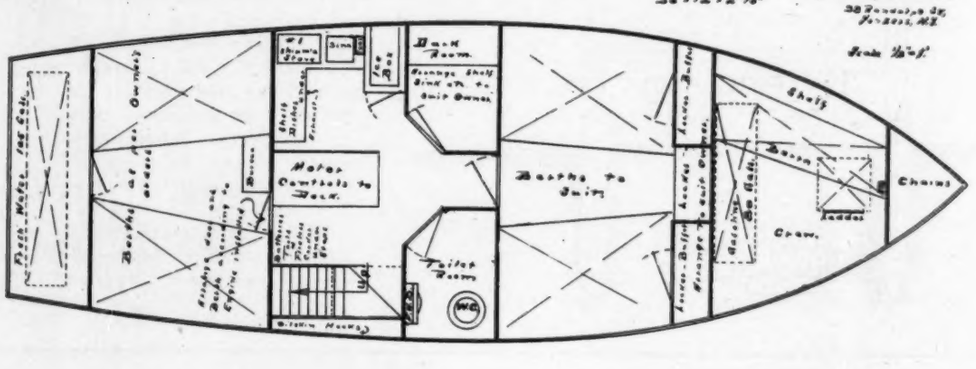




CRUISING IS OFTEN DONE IN SHELTERED WATERS AND TO ENJOY THE PLEASURES OF A VACATION ABOARD SHIP, GOOD SLEEPING AND LIVING QUARTERS ARE MORE IMPORTANT TO MANY YACHTSMEN THAN SPEED. THE AVERAGE HOUSEBOAT IS TOO LARGE FOR MANY MEN WHO DESIRE THE ADVANTAGES OF A LIGHT AND AIRY CABIN, WITH SUFFICIENT SPEED TC COVER A FAIR CRUISING DISTANCE, AND IN THIS DESIGN FROM THE BOARD OF GERALD TAYLOR WHITE, YONKERS, N. Y., THE REQUIREMENTS OF YACHTSMEN WHO ARE LOOKING FOR A SMALL AND COMFORTABLE CRAFT ARE WELL WORKED OUT IN THIS UNIQUE LITTLE CRUISING HOUSEBOAT.



FROM THE ACCOMMODATION PLAN WILL BE SEEN HOW PARTICULARLY SUITABLE THIS 36-FOOT CRAFT IS TO THE USES OF THE SPORTSMAN WHO WISHES A COMFORTABLE FISHING AND SHOOTING BOAT, AND A CAREFUL EXAMINATION OF THE ARRANGEMENTS BELOW DECKS SHOWS A BOAT THAT HAPPILY FULFILLS THE SPECIFICATIONS CALLED FOR IN A CRUISER THAT MAY BE STYLED A THOROUGHLY GOOD ALL AROUND FAMILY BOAT.



Navigation for Amateur Skippers

A Practical and Informative Article on How to Plot Out the Boat's Course, Determine Her Position While at Sea, and Handle the Craft With the Safety of the Professional

By LIEUT. COM. F. W. STERLING

PART II

THE following various publications, issued by the Hydrographic Office, dealing with special features of navigation, should be regularly consulted. They can be found at any branch Hydrographic Office in the large sea ports.

2. BOOKS AND ACCESSORIES

(a) Charts. A full set of coast and harbor charts should be on hand for all waters that it is intended to visit, or that any emergency might cause the owner to visit. *Before sailing care* must be taken to see that these charts are corrected to date. A weekly bulletin issued by the U. S. Hydrographic Office, Washington, D. C., supplies all corrections and can be had on request. An uncorrected chart is not infrequently the cause of grounding. Large scale harbor charts should be obtained for all harbors and inland waters that may be visited.

Pilot Charts of the various oceans, which furnish information about drifting derelicts, ice and floating obstructions, storm tracks, average wind and weather, ocean currents, etc.

Hydrographic Bulletin, weekly, which gives weekly changes of the above.

Daily Memorandum, which gives daily information of interest to mariners.

Notices to Mariners, which are weekly bulletins of changes in aids to navigation (lights, buoys, etc.), dangers to navigation (rocks, shoals, bars, etc.), and in general all facts that affect charts, sailing directions, etc. All charts and sailing directions should be kept corrected to date from these notices.

(b) A LIGHT AND BUOY LIST of latest date must be carried. It consists of a list of lights and buoys with their location (Latitude and Longitude), their descriptions and characteristics, and other information such as fog signal stations and submarine signal stations. It can be obtained from the Hydrographic Office and must be kept corrected to date in a similar manner to, and from the same source as, the charts.

(c) SAILING DIRECTIONS of that part of the world to be navigated should be carried. They come in bound volumes, each volume covering a large tract of pilot waters. They give detailed information of harbors, coasts, currents, courses for entering harbors, cable, provision and coaling facilities, in fact are indispensable fonts of navigational data. They are obtained from the same source as the charts and are corrected from the same publications. For American waters use U. S. Coast Pilots.

(d) BOWDITCH'S USEFUL TABLES (latest date) should be used. This book contains 48 different tables, and these comprise all the tables needed for any coasting or piloting problem that may arise.

(e) TIDE TABLES and the Nautical Ephemeris of the current year may be carried but are not necessary while on pilot waters. The Nautical Ephemeris will be needed if any celestial observations are made, and in this case a well rated chronometer will also be necessary. The time of high and low water for any port may be obtained from the local paper.

3. RECORDS THAT SHOULD BE KEPT

(a) THE LOG BOOK is a record of the vessel's cruise, and is a most necessary accessory. It should contain all the data of the navigation by dead reckoning, and should afford a complete meteorological record. In addition all occurrences of note should be recorded. It is the only available legal record in case of crime or accident on board.

Hourly data. The following hourly data should be entered in the log at the *end* of each hour:

1. Knots, to nearest tenths, made good during the hour.
2. Patent log reading, if one is carried.
3. The average engine revolutions for the hour.
4. Courses steered during the hour. (The exact time of changing course, with the patent log reading at that time should be recorded. This data is used to work up the dead reckoning, which is discussed later.)
5. The wind, its force and direction.
6. The barometer, and its attached thermometer.
7. The thermometer, both wet and dry bulb.
8. The temperature of the sea water.
9. State of weather.
10. Clouds, form, quantity, and direction from which moving.
11. State of sea.

The information in 1, 2, 3, and 4 is used for navigation.

The information in 5, 6, 7, 9, 10, and 11 is used to foretell the weather. (8) The temperature of the sea water will help detect the proximity of ice, or the presence of a cold or hot current, such as the Gulf Stream.

The Force of the Wind (5) is recorded numerically from 0 (a calm) to 12 (a hurricane). Admiral Beaufort devised a convenient scale which is given in part below:

Force of Wind.	*Velocity in Statute Miles per Hour.*
0—Calm	0–3
1—Light air	8
2—Light breeze	13
3—Gentle breeze	18
4—Moderate breeze	23
5—Fresh breeze	28
6—Strong breeze	34
7—Moderate gale	40
8—Fresh gale	48
9—Strong gale	56
10—Whole gale	65
11—Storm	75
12—Hurricane	90 and over.

The State of the Weather (9) is entered in the log by symbols as follows:

b—Clear blue sky.
c—Clouds present in sky.
d—Drizzling.
f—Foggy.
g—Gloomy, stormy looking.
h—Hail.
l—Lightning.
m—Misty.
o—Overcast sky.
p—Passing rain showers.
q—Squally weather.
r—Continuous rain.
s—Snow falling.
t—Thunder.
u—Ugly or threatening weather.
v—Variable weather.
w—Heavy dew.
z—Hazy weather.

Clouds. In the scale for the amount of clouds, 0 represents a clear cloudless sky and 10 a sky entirely overcast. The amount of clouds is recorded in tenths of the sky covered by them. The following are the principal forms of clouds, given in order of their altitude above the earth, beginning with the most elevated.

1. *Cirrus* (Ci.)—Detached delicate fibrous looking clouds, in the form of feathers, generally white, sometimes arranged in belts converging toward one or two points of the horizon.

2. *Cirro-Stratus* (Ci.-S.)—A thin whitish sheet or a tangled web formation. The sheet formation sometimes causes halos around the sun or moon.

3. *Cirro-Cumulus* (Ci.-Cu.)—*Small* globular masses or white flakes, having no shadows, or very light ones, arranged in groups or lines.

4. *Alto-Cumulus* (A.-Cu.)—*Large* globular whitish or grayish masses, partially shaded, arranged in groups or belts.

5. *Alto-Stratus* (A.-S.)—A thick sheet of grayish or bluish color, showing a brilliant patch in the neighborhood of the sun or moon, but does not produce halos. This form of cloud is similar to the Cirro-Stratus but is only about half as high.

6. *Strato-Cumulus* (S.-Cu.)—Large globular masses or rolls of dark cloud, frequently covering the whole sky, especially in winter. It differs in appearance from the nimbus in this globular or rolled appearance, and does not bring rain.

7. *Nimbus* (N.)—Rain clouds; a thick layer of dark clouds without shape and having ragged edges. Through the opening in these clouds an upper layer of Cirro-Stratus or Alto-Stratus may almost invariably be seen. Loose clouds visible floating at a low level under a Nimbus sheet are *Fracto-Nimbus* (Fr.-N.), called by sailors "*scud.*"

8. *Cumulus* (Cu.)—Wool-pack clouds; thick clouds of which the upper surface is dome-shaped and exhibits protuberances, while the base is horizontal. The true Cumulus has clear superior and inferior limits. It is often broken up by strong winds, and the detached portion is called *Fracto-Cumulus* (Fr.-Cu).

9. *Cumulo-Nimbus* (Cu.-N.)—The thunder-cloud or shower-cloud; heavy masses of clouds in the form of turrets, mountains, or anvils, generally having a fibrous sheet above and Nimbus beneath. From the base are generally seen showers descending.

10. *Stratus* (S.)—A horizontal sheet of lifted fog; when broken up by wind it is called *Fracto-Stratus* (Fr.-S.).

The State of the Sea is recorded by the following symbols:

B—Broken or irregular sea.	L—Long rolling sea.
C—Chopping, short or cross.	M—Moderate sea or swell.
G—Ground swell.	R—Rough sea.
H—Heavy sea.	S—Smooth sea.
	T—Tide rips.

(b) The Navigator's Note Book. The navigator should keep a note book in which to enter all the bearings and observations taken, and all work and calculations connected therewith. It should form a complete history of all navigation performed.

4. REPORTS MADE

Anything of an unusual nature should be reported to the Hydrographic Office at Washington; derelicts sighted, icebergs, any buoy or marker that is suspected to be out of position, any light that is out or that is not showing in accordance with its latest description in the Light List, any unusual meteorological phenomenon, in fact anything that will promote safe navigation, should be reported. Every mariner should have the best interests of the brotherhood at heart.

All navigational information in this country emanates from the Hydrographic Office and it is entitled to the aid of every person who performs navigation.

The bearing of an object from a vessel is the direction in which the object is seen from the vessel. It is the angle between the meridian passing through the observer and the object. It is called true, magnetic, or compass, depending upon the meridian of reference chosen. This is explained later.

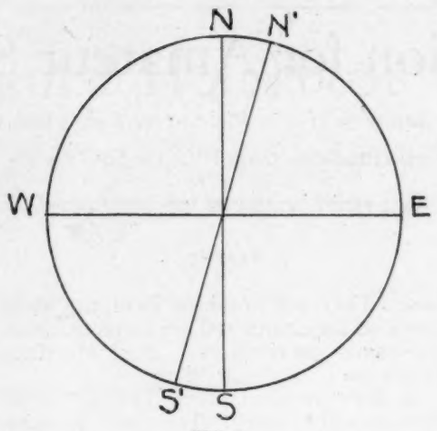


FIG. 7

A Line of Position is any line on which the vessel's position is known to be, that can be plotted on a chart.

A Line of Bearing is any *line of position* obtained from a bearing.

A Position Point is any point on either a line of position or a line of bearing at which the vessel's position is known to be. A position point, generally called a "*fix*," can be obtained by the intersection of two lines of position, two lines of bearings, or one of each.

COMPASS ERROR

Variation of the Compass. Since the earth's magnetic pole in each hemisphere differs in geographical position from the geographical pole, the earth's magnetism will cause the compass needle to point to a spot (the magnetic pole) that is different from the geographical pole (called the *true pole*). Hence the compass needle will point at an angle to the true meridian. The geographical pole lies true North of all points in the Northern hemisphere. The angle that the great circle through the observer's position and the magnetic pole makes with the true meridian (viz: the great circle through the geographical pole) is called the *variation*.

This variation differs for different points on the earth. The variation for any given locality is shown on the charts. A nautical chart always contains the data from which the navigator can find the variation for any locality for any year.

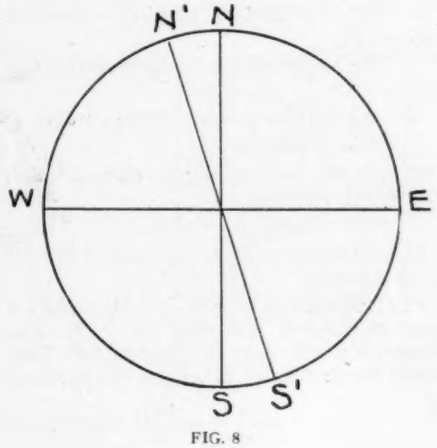


FIG. 8

Deviation of the Compass. In addition to the variation, the compass ordinarily has a still further error in its reading. This arises from the effect produced on it by masses of magnetic metal in the vessel itself. Deviation, which is produced by attraction of the compass needle by magnetic iron within the vessel itself, varies for different vessels, different headings of the same vessel, and undergoes change as a vessel proceeds from one geographical locality to another. A table compiled to show the deviation on all headings is called a *deviation table*.

The Compass Error is the algebraic sum of the *variation* and *deviation*. As stated before the variation can be obtained from a chart. The deviation is obtained from a deviation table which is constructed by "swinging ship." This and the operation of "compensating the compass" are beyond the scope of the average amateur, but in all ports are mariners who make a specialty of this work. The simplest method of "swinging ship" for deviation, that by ranges, is described on page 49.

From what has gone before it is seen that there are three methods by which bearings and courses may be expressed: (1) *true*, when referred to the geographical, or true, meridian; (2) *magnetic*, when referred to the magnetic meridian; and (3), *compass*, when referred to the meridian in which the compass needle lies.

To convert compass bearings or courses to *magnetic* bearings or courses it is necessary to apply the deviation, corresponding to the vessel's heading, to the compass bearings or courses. Likewise to convert *magnetic bearings* to *true bearings* the variation for the locality must be applied to the magnetic bearings.

The process of applying variation, deviation, and compass error under all circumstances is one with which the navigator must become thoroughly familiar; these various problems are constantly arising; no bearing can be plotted, or course accurately set, without involving this problem, and careful study is recommended.

When the effect of a compass error, whether arising from variation or deviation, is to draw the North end of the compass needle to the right the error is named *East* or is marked +; when its effect is to draw the North end of the needle to the left it is named *West*, or marked —.

Figures 7 and 8 represent, respectively, examples of Easterly and Westerly errors. In both figures consider that the circles represent the observer's horizon, N. and S. being the *true* North and South points in each case. If N.′ and S.′ represent the corresponding points indicated by a compass whose needle is deflected by a compass error, then in Fig. 7, the North end of the needle being drawn to the right the error is Easterly or plus, and in Fig. 8, the North end of the needle being drawn to the left the error is Westerly or minus.

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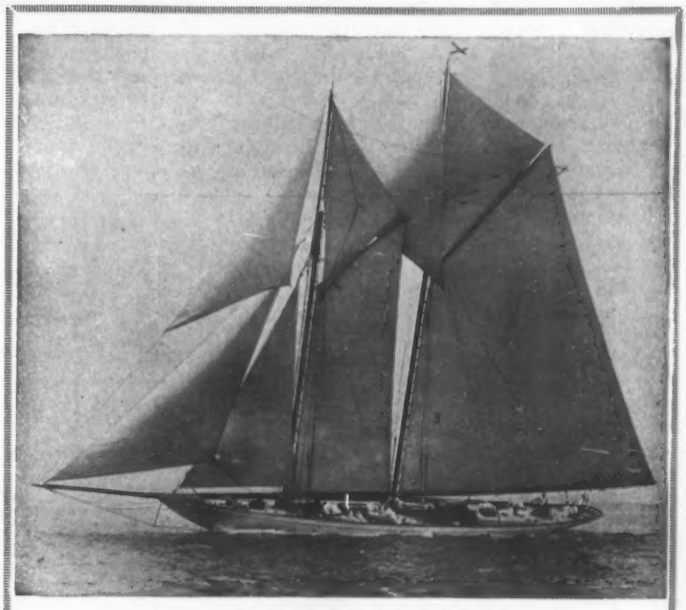

The Quality and Cut of the Sails is as important a factor in a boat's speed as the design of her hull.

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Considering Fig. 7, if we assume the Easterly error to be one point, it is apparent that, if a direction N. by W. is indicated by the *compass*, the *true* direction is N., or one point to the right. Similarly, if the compass direction is N. by E., the true direction is N.N.E., or still one point to the right. If we follow around the whole compass card, the same relation will still hold in every case, the true direction being always one point to the right of the compass direction. Thus, if the compass direction is South, the true direction is S. by W. To understand this consider that you stand in the center of the compass card facing in the direction of the compass reading.

In Fig. 8, assuming the compass error to be one point Westerly, the converse of the above holds true. All *true* directions are one point to the *left* of the corresponding compass directions. Thus, if the compass direction is N. by E., the true direction will be North.

A few simple rules should be remembered when working compass problems:

1. When the *true* bearing is to the *right* of the compass bearing the error is *East*.

2. When the *true* bearing is to the *left* the error is *West*.

3. When applying the compass error imagine yourself standing in the center of the compass card, facing the direction involved in the problem.

4. Deviation plus variation equals compass error. This means the algebraic sum: thus, if variation is 5° E. (+), and deviation is 3° W. (—), compass error is 2° E. (+).

5. To convert from compass to magnetic direction, if the magnetic direction is to the right, the deviation is Easterly. Conversely, to convert a compass direction to a magnetic direction, if the deviation is Easterly, apply it to the right of the compass bearing, if Westerly to the left.

6. To convert from magnetic to true directions, apply the variation to the right of the magnetic direction if the variation is Easterly, and to the left if Westerly.

SWINGING SHIP FOR DEVIATION. Variation for any locality can be obtained from the chart of that locality. To find the compass error on any vessel heading it is necessary to know the deviation on that heading. The simplest way of determining the deviation on the various compass headings of a vessel is to swing ship by the method of ranges.

A Range consists of two well defined and chartered objects in line with each other. The direction of the line through these two objects can be ascertained from the chart. Ranges whose magnetic bearings are known have been formed naturally or have been laid out for the aid of navigation in nearly all localities.

To obtain the deviation on various compass headings of a vessel (a deviation table) proceed as follows: Having located a magnetic range, steam across this range on various compass headings (every compass point if time and circumstances permit). Steady on the course for three minutes before crossing the range. Observe the compass bearings (on each heading) of the range when the two objects are in line as observed from the vessel. The deviation for each heading is the difference between the compass bearing of the range on that heading and the known magnetic bearing of the range. RULE.—*The deviation is Easterly when the magnetic bearing is to the right of the compass bearing, and Westerly when the magnetic bearing is to the left of the compass bearing.*

An example will serve to clear up the above: Suppose the magnetic bearing of the range is N.E. (N.45°E.). Steaming across the range the compass bearing on each point of compass heading* is taken as follows (columns 1 and 2):

*Only eight compass points are taken for demonstration.

Column 1 Compass Heading	*Column 2* Compass Bearing of Range	Bearing of Range *Column 3* Magnetic	*Column 4* Deviation
N	N 47° E	N 45° E	2 W
N by E	N 48° E	"	3 W
NNE	N 49° E	"	4 W
NE by N	N 47° E	"	2 W
NE	N 45° E	"	0
NE by E	N 43° E	"	2 E
ENE	N 42° E	"	3 E
E by N	N 41° E	"	4 E

Record in column 3 the magnetic bearing of the range. To obtain column 4 take the numerical differences between columns 2 and 3 and mark the results East or West according to the rule given above.

Before Swinging Ship see that all portable metal objects, especially those near the compass, are secured in the positions habitually occupied by them at sea. A change in the position of metal objects near the compass will affect itsd eviation. See that the vessel is on an even keel. This rule also applies when taking bearings. Steam across the course slowly, having enough headway to keep a steady course.

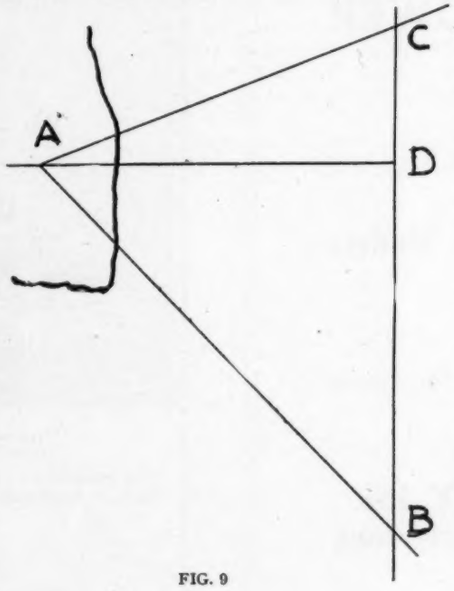

FIG. 9

The navigator should swing ship when practical before any long trip, or after laying in port any very long interval. It is not necessary to obtain the deviation on every compass point. If a table of deviations on every other point is constructed the deviation on intermediate points can be interpolated.

THE VESSEL'S POSITION

FINDING THE VESSEL'S POSITION, when piloting, resolves itself into four general cases:

1. To get the vessel's position when one object of known position is in sight.

2. To get the vessel's position when two objects of known position are in sight.

3. To get the vessel's position when more than two objects of known position are in sight.

4. To get the vessel's position when no objects of known position are in sight.

Case 4 is a method of soundings and as such is discussed in Chapter 5 under that heading.

(1) TO GET THE VESSEL'S POSITION WHEN ONE OBJECT OF KNOWN POSITION IS IN SIGHT.

(a) *By bearing and distance.* Take a compass bearing of the object. Convert this bearing to magnetic or true bearing by applying deviation or compass error. Plot this line of bearing on the chart by means of parallel rulers, using the magnetic or true compass rose, depending upon whether the bearing has been converted to a magnetic or true bearing. The vessel lies somewhere on this line. If the distance from the object can be obtained, an arc of this length with the object as a center will intersect the line of bearing at the vessel's position.

The distance may be estimated, but this is of doubtful value. An estimated distance may be verified by a sounding, if the bottom is very irregular so that a characteristic sounding may be obtained.

The distance from an object may be found by the vertical angle method if the height of the object is known, and the angle the object subtends at the observer can be measured. The heights of all lighthouses are given in the Light List. Measure the angle subtended by the lighthouse by means of a sextant. Now

$$d = .567\frac{h}{O}$$

where d = distance required in knots
h = height of lighthouse
O = angle measured, in minutes of arc.

Example:—A lighthouse 150 feet high subtends an angle of 12′; find the distance.

$$d = \frac{150}{12} \times .567 = 7.09 \text{ miles (nautical)}$$

Table 33 of Bowditch's Tables (Edition of 1913) can be used to solve problems of the above kind. Enter the column corresponding to the height of the object. Find the angle nearest to that measured, and on the same line (in the first column) is found the distance of the object.

(*Continued on page 292*)

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The Service It Gives to Yachtsmen

The Buyers' Guide is ready to give full information about any article of equipment in which you may be interested and to purchase for the reader anything from a boat nail to a completed boat

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6-18

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50 POWER, RELIABILITY AND ECONOMY ARE QUALITIES BUILT INTO BUFFALO MOTORS, AND THIS IS NOT THE RESULT OF CHANCE BUT THE PRODUCT OF AN ORGANIZATION ENTIRELY DEVOTED TO BUILDING A MARINE-MOTOR WHICH WILL GIVE A SAFE MARGIN OVER THEIR RATED POWER, AND TO DO THIS WITH THE LEAST POSSIBLE FUEL AND UPKEEP EXPENSE. BUFFALO ENGINES ARE BUILT IN MANY SIZES, FROM 3 TO 150 H. P. IF YOU WANT A MOTOR FOR RUNABOUT, CRUISER OR WORK BOAT, IT IS GOOD ADVISE TO CHOOSE A

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40. Arrow Motor & Machine Co.
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50. Buffalo Gasolene Motor Co.
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THE BUYERS' GUIDE

What It Does for the Marine Trade

By listing their names and merchandise in the Buyer's Guide manufacturers and dealers will be in a better position to serve the yachtsman

Do you know that in 1917 inquiries to this department resulted in the purchase of $45,592.32 worth of boats, engines and accessories?

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1. C. D. Durkee & Co

Flags
1. C. D. Durkee & Co.
2. G. B. Carpenter & Co.
33. W. & J. Tiebout.

Glue (Marine)
69. Jeffery's, L. W. Ferdinand & Co.

Hollow Spars
115. Pigeon Fraser Hollow Spar Co.

Galley Supplies
92. G. Washington Sales Co.

Ignition Appliances
71. Splitdorf Electrical Co.
73. Bosch Magneto Co.
74. Dayton Electrical Mfg. Co.

Knock-Down Boats
117. Brooks Mfg. Co.

Lighting Outfits (Electric)
79. Prest-O-Lite Co.
80. Dayton Electrical Mfg. Co.

Lighting Outfits (Acetylene)
81. Prest-O-Lite Co., Inc.

Life Preservers
143. International Life Suit Corporation.
25. Universal Safety Mattress Co.
29. Life Preserver Suit Co., Inc.

Mufflers and Silencers
3. Wilcox, Crittenden & Co.
82. L. O. Koven & Bros.
2. G. B. Carpenter & Co.
1. C. D. Durkee & Co.
33. W. & J. Tiebout.

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132. Sound Machine Co.
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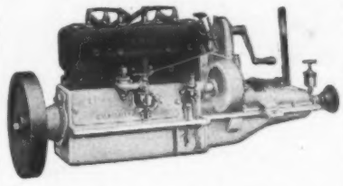
137. J. H. Curtiss Co., Inc.



42 REPUTATION COUNTS FOR MUCH AND IT HAS PUT THE GRAY MOTOR UPON A HIGH STANDARD RECOGNIZED OVER THE WORLD. DESIGNED FOR MARINE WORK AND POSSESSING ALL THE MARINE FEATURES WHICH EVERY SKIPPER IS LOOKING FOR AT A MODERATE PRICE, GRAY 2-CYCLE MOTORS ARE DEPENDABLE POWER PLANTS IN SIZES FROM 3 TO 8 H. P. AND THE 4-CYCLE GRAY IN 10 TO 24 H. P. ARE THOROUGHLY GOOD 4-CYLINDER MOTORS FOR RUNABOUT, CRUISER AND WORKING CRAFT.

2 HOOD VENTILATORS PERFORM AN IMPORTANT DUTY ABOARD MOTOR-YACHTS AND PROMINENT AMONG A VARIETY OF DESIGNS IS THE SEAMLESS HAMMERED COPPER VENTILATOR ILLUSTRATED. THE COMMON FORMS OF VENTILATORS ARE MADE IN SECTIONS, SEAMED AND RIVETED TOGETHER, BUT THE SEAMLESS TYPE IS FORMED IN ONE-PIECE WITHOUT JOINT OF ANY KIND. THIS IS BUT ONE OF THE HUNDREDS OF ARTICLES OF YACHT MERCHANDISE STOCKED AND CATALOGUED BY THE WELL KNOWN HOUSE OF CARPENTER.

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85. Noyes Machine Co. (Feathering).

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88. Hyde Windlass Co.
89. Columbian Bronze Corp.

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94. Paragon Gear Works.

Sails
97. Wilson & Silsby.
98. Jno. Curtin, Inc.
99. Geo. B. Carpenter & Co.
100. Wm. H. Griffin.
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103. Bottger Bros.
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105. Dayton Electrical Mfg. Co.
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A Luminous Compound for Use in the Compass Dial

UNDER present conditions at sea there are times when a light on the bridge of a ship may have fatal consequences, revealing the location of the ship to the lurking submarine. But the telegraph, the compass, the zigzag clock and other instruments must be visible to the navigator, and heretofore lights of some sort have been absolutely necessary. This source of danger has now been overcome by the application of Marvelite to the dials of these instruments. Marvelite is a luminous compound, made with radium, which makes the dials clearly readable in the dark to anyone standing near them, but does not give off light enough to be seen many feet away.

It has been used for some time on clocks, watches, compasses, and by the United States Government on barometers, altimeters and other instruments of the Signal Corps and the Navy.

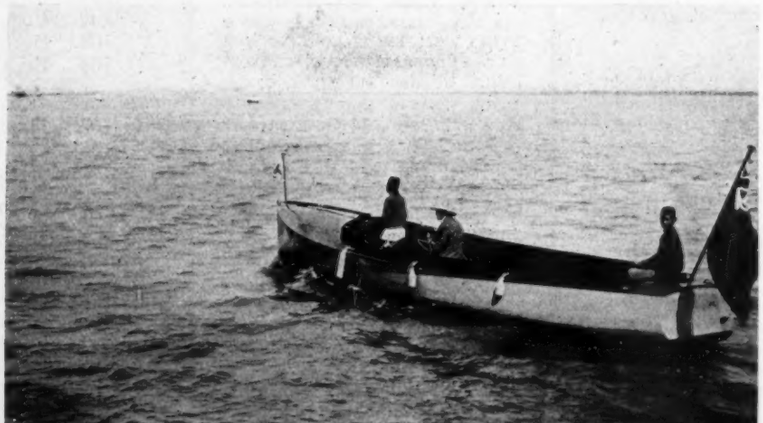
The manufacturers of Marvelite have recently solved the problem of applying their material to wet compasses, so that it resists the action of alcohol or other fluids in which the dial floats. It is also used on the dial of the log.

There are many other uses for the material, such as on exit and danger signs and for the location of stairways, passageways, escutcheons on doors, etc. It is also made up in luminous numbers, pendants and push buttons for fastening to anything that has to be located in the dark.

There are various kinds of luminous materials, but only those containing radium will stand the test of time. Marvelite is permanently luminous for all practical purposes. The manufacturing company secures its radium from the Schlesinger Radium Company one of the largest producers of pure radium in the world; and the honor and reputation of both companies are placed squarely back of the statement that Marvelite is made with radium, which is the sole source of its luminosity.

There are so many uses for this material that have not yet been developed that the company maintains an experimental laboratory for the purpose of working out problems that are presented to it.

AN INDIAN RUNABOUT



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A Book on Watertightness

THERE is a little booklet published by L. W. Ferdinand & Co., of 152 Kneeland Street, Boston, Mass. that is of more than passing interest to the man who owns a boat. It was written by E. H. Coultas and contains complete information as to making and keeping a small boat watertight. Send for a copy direct or through YACHTING.

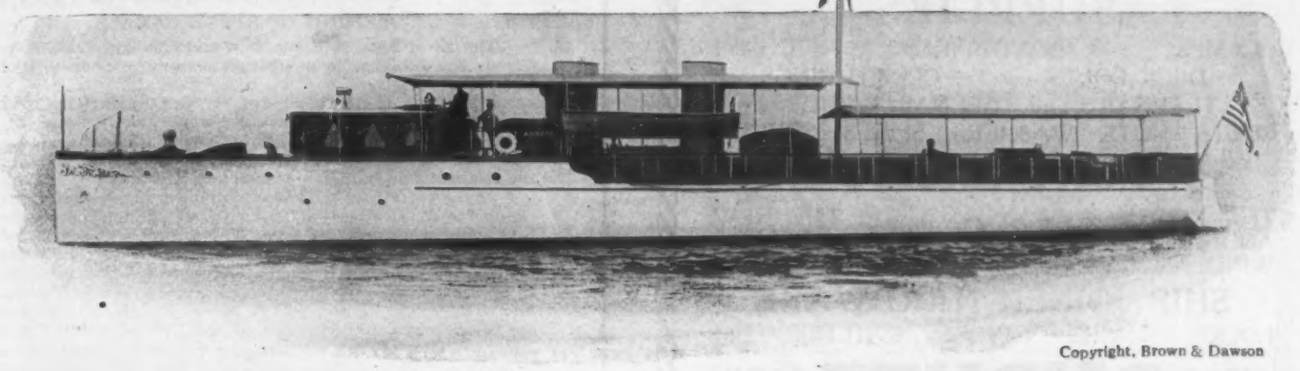
A Trying Voyage

LAST week a fine, large American barkentine arrived at an Atlantic port with all on board sick with African fever after a passage of over eighty days from the Gold Coast. Three men died on the way home and at no time was there more than two men besides the captain on deck. The captain seemed able to stand all kinds of hardship with the greatest amount of fortitude. So sick were the crew that immediately on arrival at Quarantine the doctor ordered all hands to Hoffman Island, except the captain, who, while far from being well, was able to remain on board alone until the next morning. During the night another of the crew died. Others are in serious condition, but with some prospect of their recovering. Only the mild weather enabled the ship to make port, as she had been in sight of Atlantic City ten days before arriving here, having been blown off shore by a westerly gale, finally being taken in tow 25 miles outside of Sandy Hook and anchored at Quarantine, there ending a voyage of hardship to all hands.

A Virgin Field for the Internal Combustion Engine Business

CRUDE oil engines have been introduced on the run from Swatow to Kitvang, China, where the launches Sue Tye and Sue Cheong are equipped with Bolinders engines of 120 and 100 horse-power, respectively. The speed of these boats is 10 and 11 knots and their run comprises a river service of two miles long. Passengers are carried at the rate of one-quarter of a cent per mile.

Built by **LUDERS**
Marine Construction Co. **Stamford, Conn.**
The last word in yacht design and building



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Aurore, a 96-Footer, built by us for Mr. Stuart Wyeth.

Historic Mackinac

(Continued from page 274)

until 1834 its chief promoter. He was born in Waldorf, near Heidelberg, Germany, in 1763 and died in New York in 1848. One of his descendents, John Jacob Astor, was drowned, with many other Americans by the sinking of the Titanic.

Carver Pond, a small artificial lake is named after Jonathan Carver, explorer and fur trader, who left Old Mackinac in 1766 on an extensive trip into the great Northwest. He had served in the fighting about Lake George and later was wounded in the massacre at Fort William Henry.

Calumet Trail is an old Indian trail. This is not an Indian word as may be supposed, but Norman-French from the Latin *calamus* —a reed. The calumet is the peace pipe of the North American Indians—a tobacco pipe having a reed stem about 2½ feet long decorated with locks of women's hair and feathers, and having a bowl of polished marble. It was the ratifier of treaties and a sign of hospitality. There were different calumet pipes for different public or private contracts, including war and peace. If war was intended, the shaft and feathers were colored red. The use of the calumet pipe made a contract sacred and the Indians believed the violation of such a contract would be swiftly and surely punished by the gods. But the calumet pipe was most often used to seal a pact of peace.

Indians of the Algonquin stock were the most numerous and widely spread inhabitants of the Mackinac country, with the Chippewas probably the chief tribe, but Ojibwas, Onawas and Podawadumees are also identified with the history of the Island. According to Schoolcraft in his interesting volume, The Indian in His Wigwam, the children of the Chippewas frequently assembled in the hot summer evenings, and amused themselves by little chants, with shouts and wild dancing. Attracted by the shouts of merriment he walked one evening to a green grassed clearing, where the air and the plain were literally sparkling with the phosphorescent lights of the fire-fly. By careful attention he made out the chant which the Indian children were addressing to the fire-fly,

"Fire-fly, fire-fly! bright little thing,
Light me to bed, and my song I will sing.
Give me your light, as you fly o'er my head,
That I may merrily go to my bed.
Give me your light o'er the grass as you creep,
That I may joyfully go to my sleep.
Come, little fire-fly—come, little beast—
Come! and I'll make you tomorrow a feast.
Come, little candle that flies as I sing,
Bright little fairy-bug—night's little king
Come, and I'll dance as you guide me along,
Come, and I'll pay you, my bug, with a song."

Mackinac Island has often been visited by authors and has furnished the setting and atmosphere for many a well told tale, such as Jeannette by Constance Fenimore Woolson and The Story of Leonie by Emily Huntington Miller. William Cullen Bryant's Letters Of A Traveller relates the account of the poet's trip to Mackinac in July 1846.

Mackinac Island and surrounding country is thronged with tourists and summer residents from June to September and its fine hotels makes a delightful spot for spending a vacation. Mackinac, which is correctly pronounced Mackinaw is known throughout North America. The Mackinaw coat is a popular garment for cold weather wear, the Mackinaw trout has become a distinctive name for the trout which abound in the Straits of Mackinac, and the Mackinaw boat formerly figuring prominently in the annals of trappers and traders was a large flat-bottomed craft, pointed at both ends. It was particularly suitable to ascend and descend easily the dangerous rapids and so was well fitted for the fur trade. With it was used a large sheet of oiled canvas, to cover the merchandise of furs in bad weather.

From this brief appreciation by quotation from the rich store of material gathered in two large, well printed and illustrated volumes, written by Edwin O. Wood under the title of *Historic Mackinac* and recently published by The Macmillan Company of New York City, our readers may glean something of the interest of this charming country. Mr. Wood has taken an infinite amount of pains to set down entertainingly and clear the rich and varied historical material, of this romantic and fertile field. The most graphic descriptions of famous travelers have been reprinted from books long out of print, and the abundance of illustrations in half-tone and quaint wood cuts, with maps and comprehensive chronology and complete bibliography completes an extremely interesting and noteworthy work.

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STATE OF NEW YORK
OFFICE OF SUPERINTENDENT OF PUBLIC WORKS

Albany, N. Y., May 2nd, 1918

NOTICE OF OPENING OF STATE CANALS:

The Erie, Oswego, Champlain and Cayuga and Seneca Canals will be open to navigation at twelve o'clock noon of May 15, 1918.

The Black River Canal will be open to navigation at twelve o'clock noon of June 1st, as heretofore.

The new channel of the Erie Canal will be available for boats for its entire length; as will also the new channels of the Oswego and Champlain Canals as heretofore.

At the opening of the season and until further notice, the channel of the Cayuga and Seneca Canal will be available for boats only of the ordinary type. The unimproved Erie Canal into and through the city of Rochester may be used by boats of the ordinary type between the hours of 6:00 A. M. and 10:00 P. M. daily; and through the city of Syracuse, during the hours of 10:00 P. M. and 6:00 A. M. daily. Should physical conditions permit, the unimproved Erie Canal between Rome and Mohawk and through the city of Utica may be used by boats of the ordinary type.

The portion of the unimproved canal between Waterford and the Hudson River at Albany will also be open to navigation at twelve o'clock noon of May 15, 1918.

The attention of boatmen navigating the canalized Mohawk, Hudson and Oswego Rivers is called to the necessity of having on board each barge an anchor of at least 150 pounds in weight for the boat's own protection.

Charts showing the channel in the canalized rivers and lakes may be obtained at this office at a cost of twenty cents per chart.

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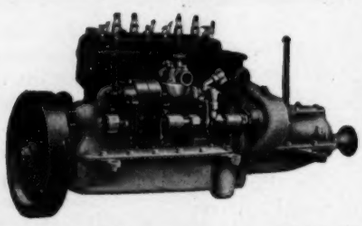

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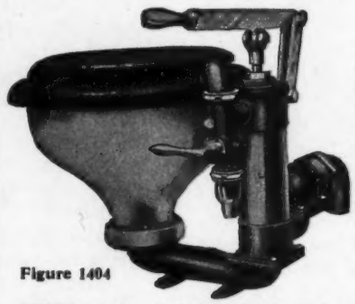

Figure 1404

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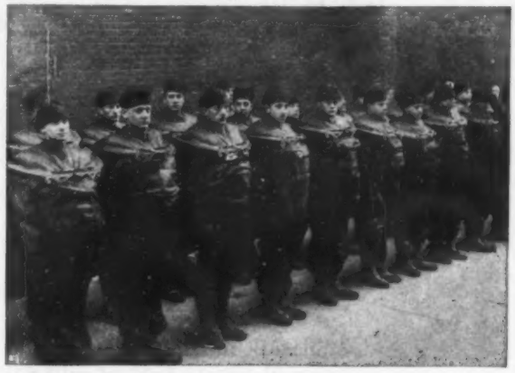

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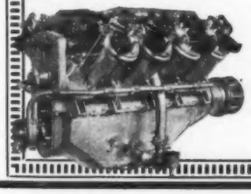

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Navigation for Amateur Skippers

(Continued from page 282)

(b) *By Two Bearings of a Single Object and the Course and Distance Run in the Interval.* In Figure 9, assume A is the object on which bearings are taken. The vessel being at B, the bearing BA is taken and the patent log is read. The vessel then steers a course BC and at C the bearing CA is taken and the patent log is read. The difference of patent log readings is the distance BC. (Note: If no patent log is carried the distance BC can be computed by knowing the speed at which the vessel is sailing and the time it takes to run the distance BC.) From the course steered and the bearings BA and CA the angles B and C can be computed and BAC=180—(B=C). The problem is one of plane trigonometry, given two angles and one side of a plane triangle. It can be solved in three ways:

(A) by plane trigonometry,
(B) by Bowditch's Tables,
(C) by graphic chart work.

(A) This method is little used, the last two being far simpler. By plane trigonometry,

$$AB = \frac{\sin C}{\sin A} \times BC$$

$$AC = \frac{\sin B}{\sin A} \times BC$$

Dropping the perpendicular AD from A to BC, the distance of the object when abeam is

$$AD = AC \sin C.$$

(B) Tables 5A and 5B, Bowditch, are compiled for an inspection solution of this problem. The arguments in these tables are the difference between the course and the first bearing, and the difference between the course and the second bearing. The differences in Table 5A are in quarter points, and in Table 5B are in degrees. The factors in the columns are for a distance run of one mile. So far as the factors are concerned it is immaterial whether the courses and bearings are compass, magnetic, or true, so long as they all refer to the same meridian.

To use the tables: Enter the column corresponding to the difference between the course and the first bearing. Run down this column until the line is reached corresponding to the difference between the course and the second bearing. On this line are found two factors. Multiply the run between bearings by the first factor and the result is the distance of the object at the time of the second bearing. Multiply the run by the factor in the second column and the result is the distance when the object is abeam.

Example: A vessel heading 250° (p.s.c., per standard compass), had a lighthouse bearing 202° (p.s.c.); after a run of 10 miles the same light bore 130° (p.s.c.). Find the distance at the time of second bearing, also when abeam.

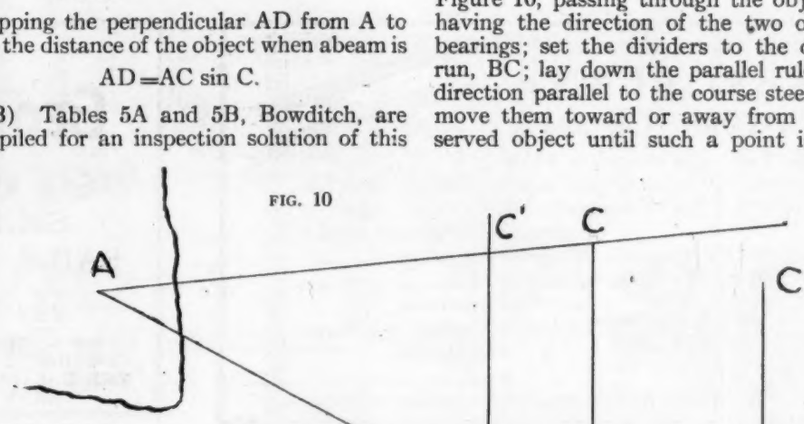
Difference between course and first bearing ..... 48°.
Difference between course and second bearing ..... 120°.

Table 5B, factor first column =0.78 and distance at second bearing =10 × 0.78=7.8 miles.

Table 5B, factor second column =0.68 and distance when object is abeam=10×-0.68=6.8 miles.

(C) There is a graphic method of solving this problem that is preferred by some navigators to the factor method. Draw upon the chart the lines CA and BA, Figure 10, passing through the object and having the direction of the two observed bearings; set the dividers to the distance run, BC; lay down the parallel rulers in a direction parallel to the course steered and move them toward or away from the observed object until such a point is found that the distance between the lines of bearings is equal to the distance between the points of the dividers. In the figure this occurs when the rulers lie along the line B C, and therefore B represents the vessel's position at the time of first bearing, and C its position at the time of second bearing. For any other positions B″C″, B′C′, the condition is not fulfilled.

FIG. 10



(D) *Special Problems.* There are many special applications of the above method of obtaining the vessel's position, that are so simple as to become mere mental problems. Some of these are given here:

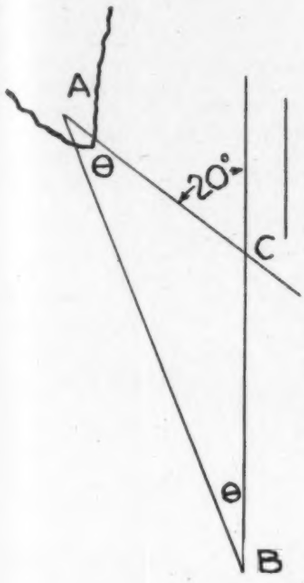


FIG. 11

NOTE: IN FIGURE 11, SUPPOSE THE ANGLE OBSERVED BETWEEN THE COURSE AND THE BEARING AT B IS O, AND AT C IS 2O. THEN THE ANGLE BAC EQUALS O AND AC EQUALS BC

Bow and Beam Bearings. If the first bearing is taken broad off the bow (45° from ahead) and the second bearing is taken on the beam (90° from ahead), then it is apparent from inspection that the distance at the time of the second bearing equals the distance run. Likewise, if the first bearing is taken abeam (90° from ahead) and the second is taken on the quarter (135° from ahead), then the distance when abeam is equal to the distance run. The distance from the object when on the bow and quarter is 1.4 times the distance run.

Doubling the Angle on the Bow. Take a bearing of an object when forward of the bow; read the patent log. Take a second bearing of the object when its angular distance from ahead is twice as great as it was at the time of the first bearing; read the patent log. The distance of the object from the vessel at the time of the second bearing is equal to the distance run between bearings.

The 26½° Rule. If the first bearing is taken when the object is 26½° from ahead, and the second bearing is taken when the object is 45° from ahead, then the *distance at which the object will be passed abeam* is equal to the run between the two bearings.

The Seven-tenths Rule. If bearings are taken of an object when two and four points on the bow, seven-tenths (0.7) of the run between bearings is the distance at which the object will be passed abeam.

The Seven-thirds Rule. If bearings are taken of an object when two points forward of the beam (67½° from ahead), and when abeam, seven-thirds (7/3) of the run between bearings is approximately the dustance of the object when abeam.

(*To be Continued*)

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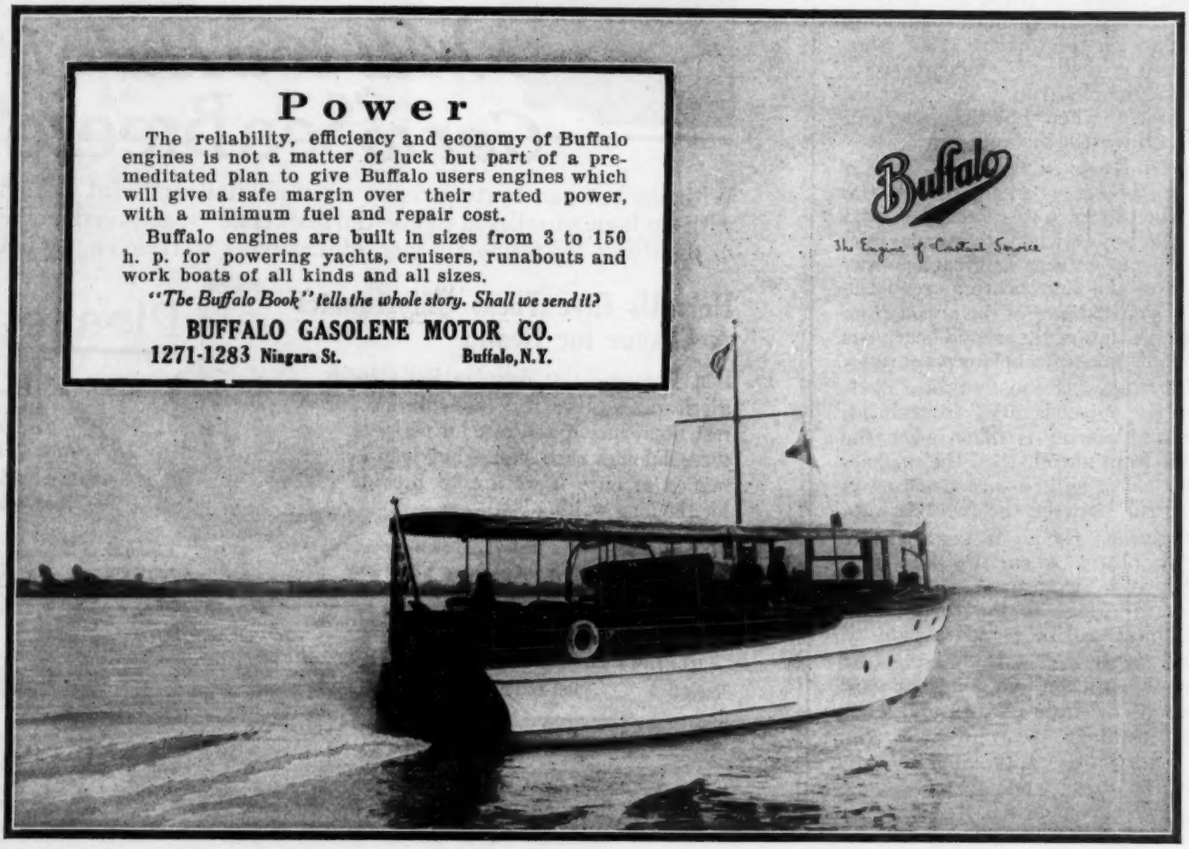
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